



# Cupping, Percussion Therapy and Trigger Point Massage

## For Musculoskeletal Pain

Jessie R. Fudge, MD FACSM  
Kaiser Permanente Washington  
Sports Medicine



# Disclosures

Jessie Fudge, MD

No Relationships to Disclose

# Cupping, Percussion Therapy and Trigger Point Massage

Role of Fascia in Musculoskeletal Pain

Cupping Therapy

Percussion Therapy

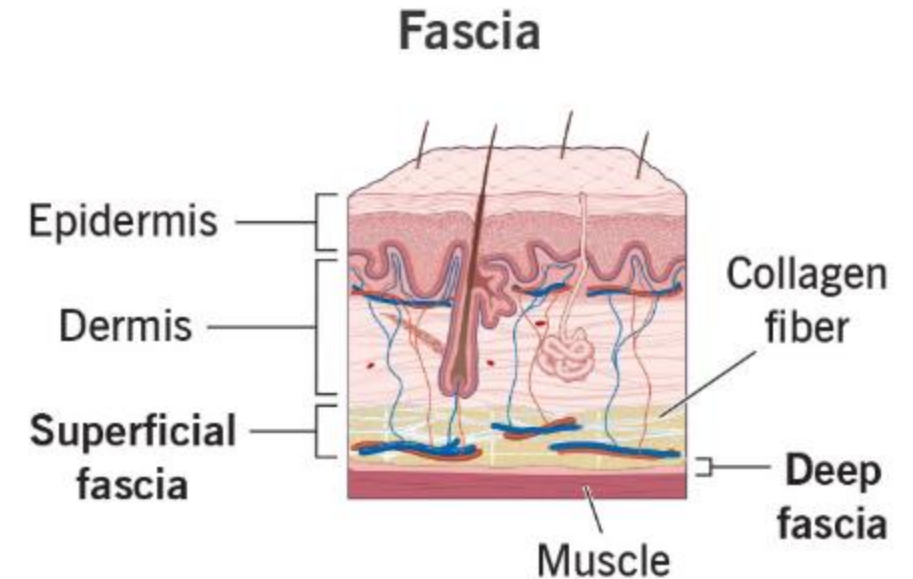
Trigger Point Massage

# Role of Fascia in Musculoskeletal Pain

# Fascia

## No agreement on a single definition

- *Network of connective tissue that surrounds organs, vessels, bones nerves and muscles*
  - Superficial (looser) and deep layers (denser)
- Connective tissue – primarily composed of collagen
  - Strong
  - Flexible
- Highly Innervated
  - Sensitive to touch, pressure and injury
- Flexible
  - Restrictions or tight fascia, can lead to pain and decreased flexibility/mobility



# Fascia

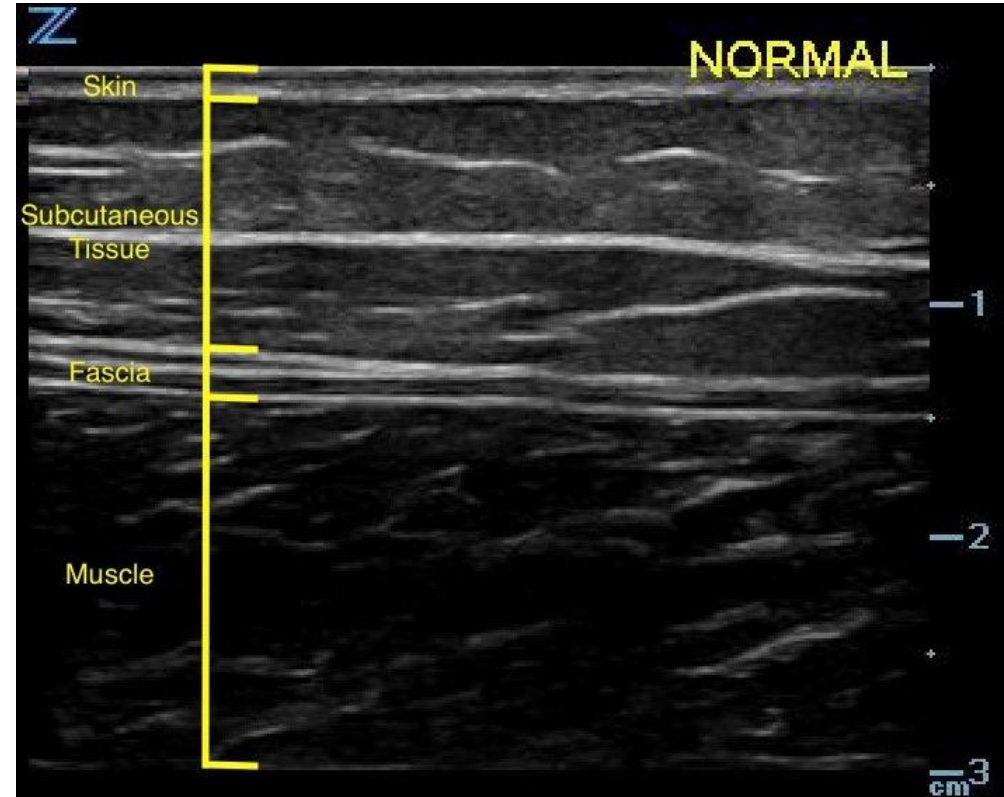
## *Limited studies on role of fascia in MSK Pain*

- Highly Innervated
  - Creates Pain Signals, especially in presence of inflammation
- Biomechanical Interface Between Muscles
  - Motion between layers contributes to mobility
  - Adherent Layers decreases mobility
    - May be due to injury, posture, scar tissue
    - ?Role in Chronic Pain
- Connective Tissue Disorders (hyper or hypo – mobile)
  - Increased rates of Musculoskeletal Pain
  - Increased rates of Proprioception Deficits
- Myofascial Pain Syndrome
  - Criteria present in 30% patients with chronic pain in the back, neck, shoulder, hip and pelvis. Also linked to headaches and TMJ

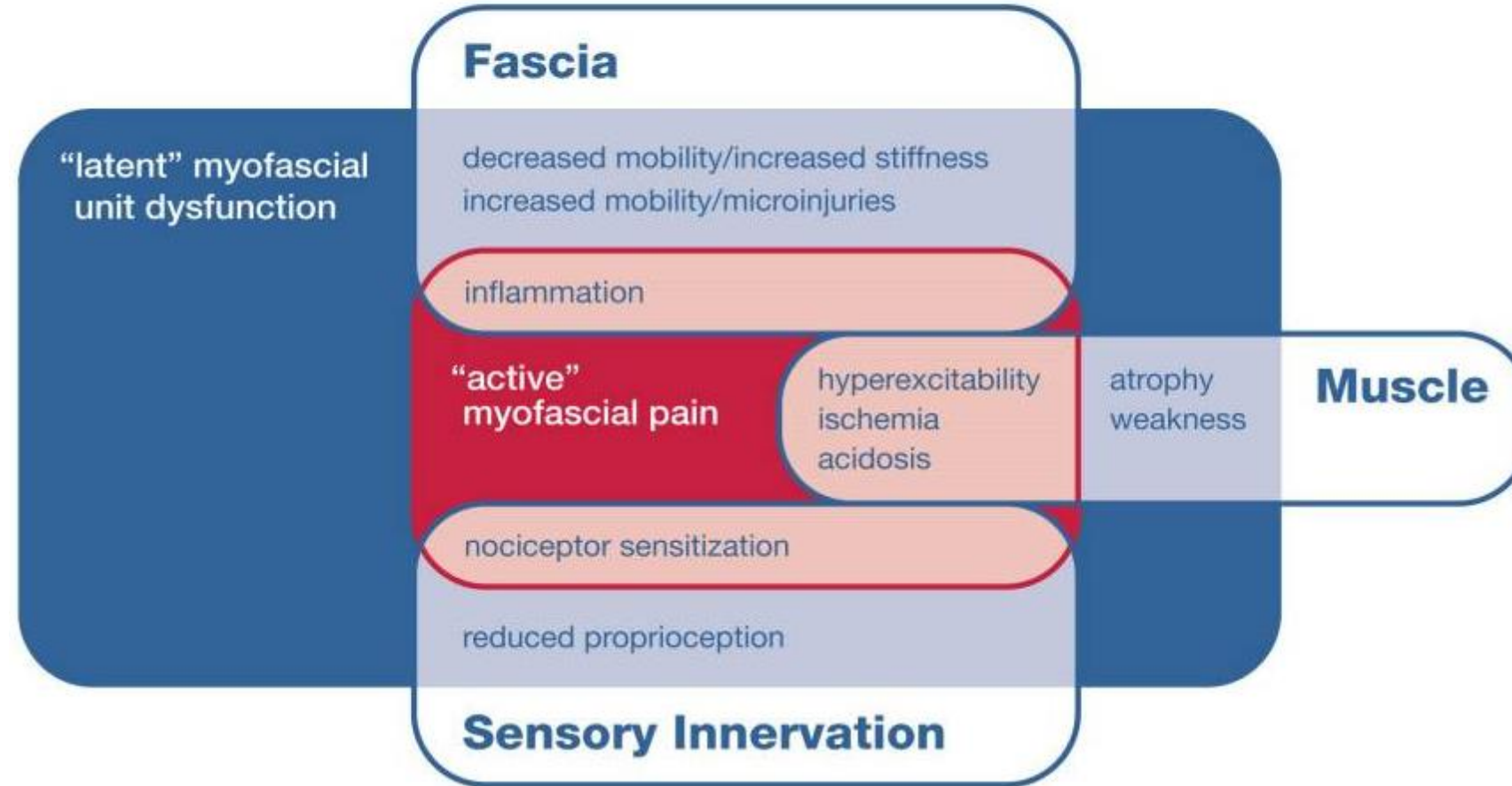
# Fascia

## *Imaging and Objective Measures*

- Evaluation of abnormalities of the myofascial unit is limited
- Cannot easily assess fascia mobility via standard imaging
- Rely on history, clinical exam
- ? Point of care US



# Hypothetical Model Relating Fascia Mobility, Proprioception, and Myofascial Pain

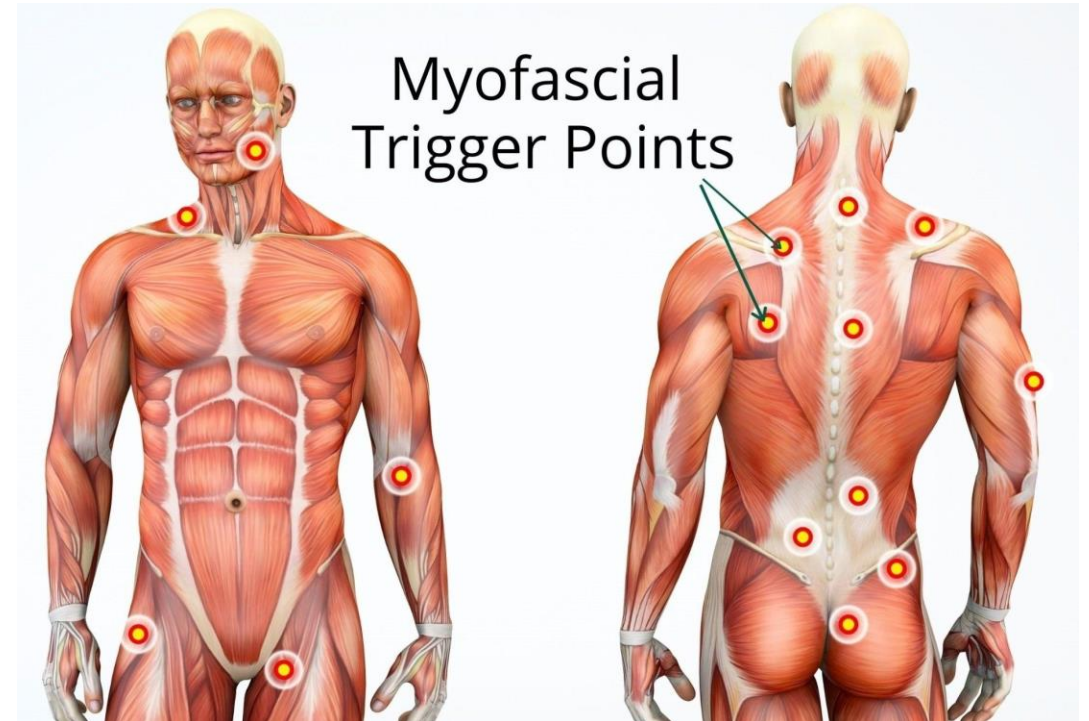




# Fascia

## *Myofascial Pain*

- When fascia in one area is stretched, tightness/restriction or pain can be felt in a different part of the body
- Does not follow traditional referred pain patterns
- Muscle Knots/Tension
- Nerve Pain



# Fascia

## *Treatment Myofascial Pain*

- Current Standard
  - Manual and movement-based therapies
  - Myofascial Release
  - Pharmacological Therapies

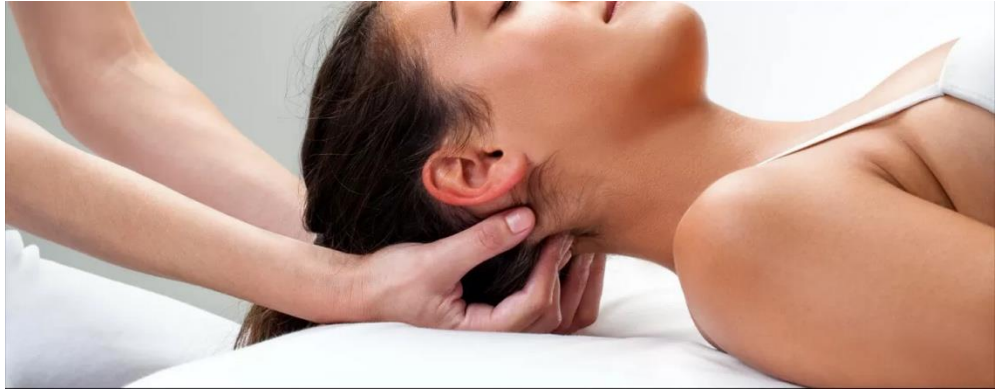
**Need to address fascia dysfunction and/or adhesions that likely contribute to decreased tissue mobility and increased musculoskeletal pain**

## *Treating Fascia*

- Increase Blood Flow and Circulation
- Release Fascial Adhesions
- Muscle Relaxation

# Myofascial Release

***Encompasses many different therapies***

- Graded stretch guided by feedback from the patient to address soft tissue restrictions
  - Neuromuscular Facilitation
  - Trigger Point Therapy
  - Massage
- 
- A photograph showing a therapist's hands performing a myofascial release technique on a patient's neck and shoulder area. The patient is lying on their back, and the therapist is using their fingers to apply pressure to the soft tissue. The patient's eyes are closed, and they appear to be in a relaxed state.
- Cupping and Percussion therapies are not frequently found in the literature related to myofascial release

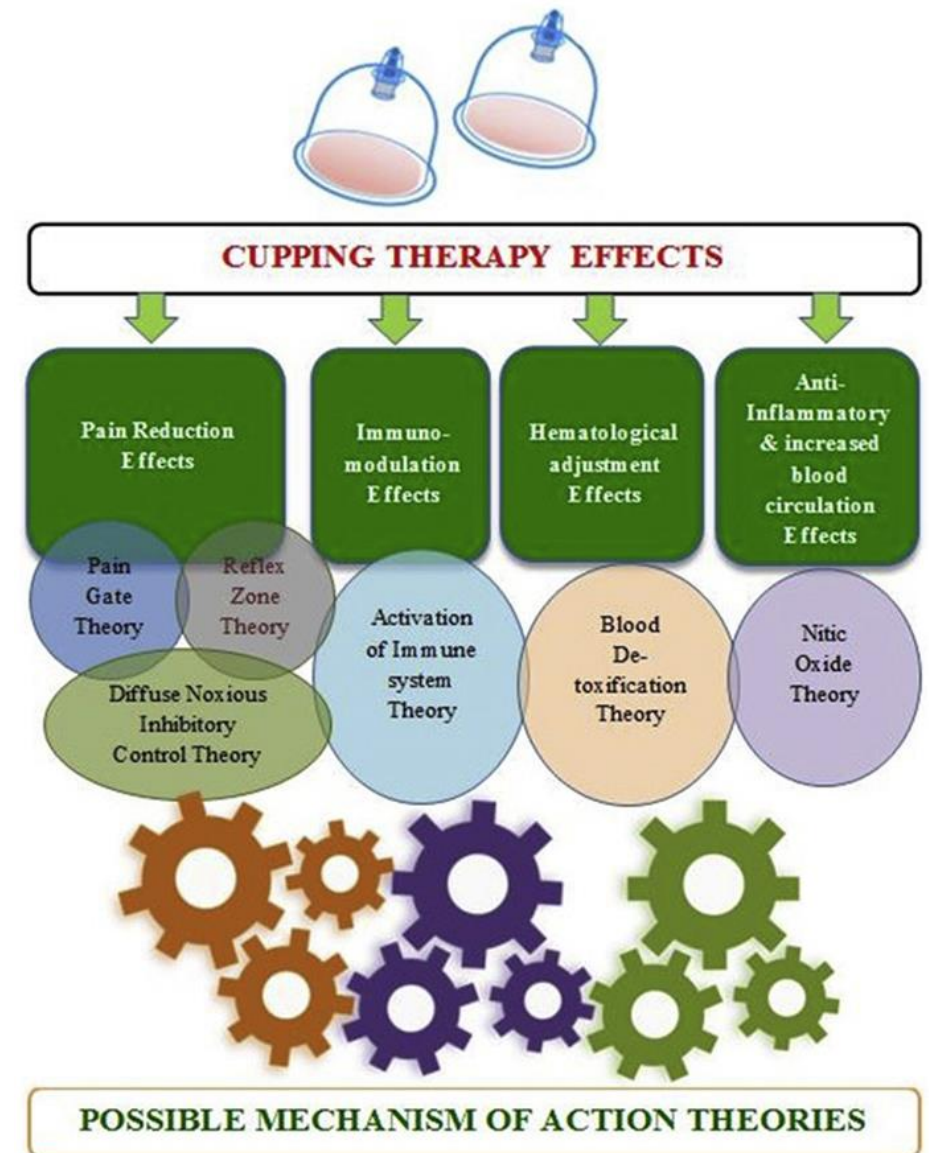


# Cupping



# Cupping Therapy

- Ancient healing technique that is performed by applying cups to selected skin points by heat or suction.
  - Dates back to 1550 BC
  - Dry vs Wet Cupping
- No clear consensus on mechanism of action of cupping. Multiple theories related to immune modulations, changes in local metabolism, alterations in gene expression
  - Increase Blood Flow and Circulation
  - Separate fascia layers to relieve adhesions and muscle tension
  - Stimulates sensory nerves



# Cupping Therapy

- Indications
  - Myofascial Pain
  - Muscle recovery
  - Systemic diseases (diabetes, HTN, RA)
- Contraindications
  - Skin lesions/Open Wounds
  - Varicose veins
  - Until further studies available absolute contraindication for – cancer patients, organ failure, pacemaker
  - Relative contraindication – acute illness, pregnancy, anticoagulant use
- Adverse events are rare



# Cupping

- Dry Cupping
- Limited Studies on use in MSK pain
- Evidence low to moderate
  - Short-term pain relief for some individuals
  - Improved flexibility and range of motion in some individuals
  - No clear long term benefit (need more research)
  - No significant risk to treatment
- Referral for treatment
  - Acupuncture, Physical Therapy, Alternative Medicine Clinics



# Cupping Massage

- Moving cups across the skin while maintaining suction
- Can be done at home





# Home Cupping Massage Guidance for Patients

- Apply lotion or oil to reduce resistance
- Pick right size cup for body part
- Move cups along the tissue planes
- Reduce suction if feeling heavy restriction or too painful
  - Increase suction if needed
- Initially no more than every other day
- Slowly build up in suction/time



# Anecdotal clinical experience

- Chronic Compartment Syndrome
- Mechanical Knee Pain
- Greater trochanteric pain syndrome



# Percussion Therapy

# Percussion Therapy

## History

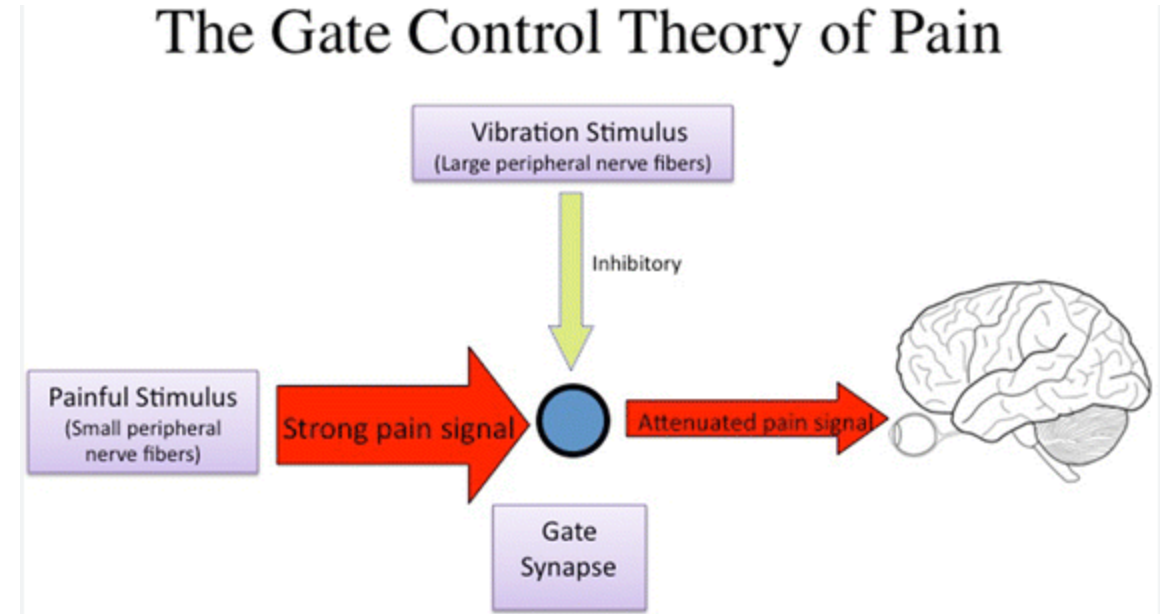
- Developed in the 1950s by Robert Fulford
  - Percussion hammer
  - Osteopathic clinic
- First commercial massage gun was invented in 2008 by Dr. Jason Werseland following an injury
  - Theragun™
  - Mobile, made for home use
  - Frequency, amplitude and torque made to provide therapy similar to tapotement massage therapy (rhythmic percussive strokes)
- Device “floats” over the surface of the skin, applying vibration and rapid pulses in short bursts of pressure to the muscle belly or tendon



# Percussion Therapy

## Mechanism of Action

- Exposure to vibrations increases muscle metabolic activity
  - Increased Blood Flow
  - Increased oxygen
  - Increased temperature
- Vibration reduces sensation of pain (gate control theory)



<https://images.app.goo.gl/CYHTqrQCynQFG1m6>




# Percussion Therapy

## Research

- Limited studies suggest that percussion therapy can:
  - Reduce Muscle Tension
  - Increases Blood Flow
  - Improve Flexibility
  - Reduce Delayed Onset Muscle Soreness (DOMS)
- Contraindications:
  - DVT
  - Cancer
  - Pregnancy
  - Osteoporosis
  - Varicose Veins
  - Bleeding disorders/anti-coagulant
  - HTN
  - Seizures, Heart Disease
  - Open wound, rashes, blisters
- Avoid use directly over the spine
- Avoid Head/Neck
- Avoid use with fractures
- Avoid use over torn muscles, ligaments or tendons

Systematic Review/Meta-Analysis

## The Effect Of Percussive Therapy On Musculoskeletal Performance And Experiences Of Pain: A Systematic Literature Review

Lorna Sams<sup>1</sup> <sup>a</sup>, Ben L Langdown<sup>1</sup>, Joan Simons<sup>1</sup> , Jitka Vseteckova<sup>1</sup> 

<sup>1</sup> Faculty of welfare, education and language, The Open University

Keywords: physiological adaptations, physical therapy, muscle strength, flexibility, pain

<https://doi.org/10.26603/001c.73795>

---

International Journal of Sports Physical Therapy

Vol. 18, Issue 2, 2023

“The results of this systematic literature review infer that PT, delivered by massage guns, can promote an acute response in muscle strength, explosive muscle strength, flexibility, and experiences of pain, when compared to alternative, placebo or no treatment. The evidence suggests that PT has an acute effect on improving musculoskeletal performance with a single application, whereas multiple treatments are required to reduce experiences of back and shoulder pain.”

- Positive effect on upper body muscle strength
  - Single case study, subjective strength assessment (MMT)
- Increase in explosive muscles strength
  - 21 studies
  - Local vibration – not only hand held devices
    - broader sample than percussive therapy alone
- Improved Flexibility
  - No significant difference in improvements compared to traditional static stretching
  - Variability in vibration settings, so no clear recommendation on time of frequency
- Reduce Musculoskeletal pain
- Improvements in pain correlated with improvements in flexibility

# Percussion Therapy

## Patient Guidance

- Start low intensity to see how the individual body responds to this treatment
- Don't add extra pressure to the massage gun
  - Float over the soft tissue
- Slowly move along the muscle being treated. Hold at areas of more discomfort/tightness
- Avoid using the massage gun over bony prominences
- Limit to a couple minutes per muscle group
- Can be used before or after exercises





# Trigger Point Massage

# Trigger Point

- Tight, band-like nodules within skeletal muscle
  - Common in myofascial pain syndromes
  - Linked to fascia dysfunction
  - Often occur in core muscle groups related to posture and balance
  - Can cause intense and referred pain
- Diagnosis is based on history and palpation
  - Painful nodule within a muscle
- Massage and physical therapy are first line treatments for trigger point pain



# Trigger Point Massage

- Myofascial Release Technique
- Direct pressure applied over the trigger point
  - Self Massage
  - Massage Therapy
  - Physical Therapy
- Limited quality data on the efficacy of trigger point massage
- Goal of Therapy
  - Reduce Muscle Tension
  - Increase Blood Flow
  - Improve Flexibility



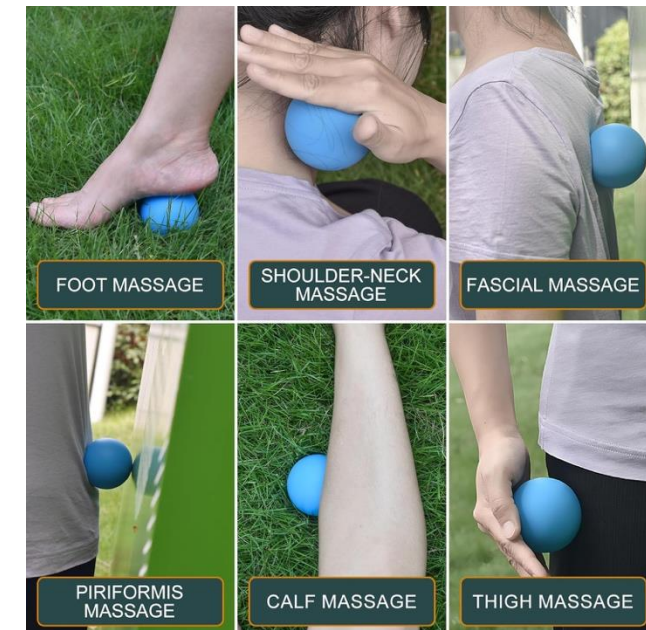
# Trigger Point Massage

## Self Massage Instructions

- Find the trigger point
  - Knot in the muscle
  - Usually feel increase pain/radiating pain with deep pressure
- Apply firm pressure to the trigger point until you feel release
- Repeat on other areas of pain and in the same area if needed
- Can be done multiple times per day
- Stay well hydrated
- Stretch

## Helpful Tools

- Cane Tool (Theracane™)
- Lacrosse Ball
- Tennis Ball



# Thank You



# References

- Bruno Bordoni; Navid Mahabadi; Matthew A. Varacallo. Anatomy. Fascia. National Library of Medicine, StatPearls. Last Update July 17, 2023
- Helene M Langevin. Fascia Mobility, Proprioception, and Myofascial Pain. Life. 2021 July 8; 11(7):668
- Tamer S. Aboushanab, Saud AlSanad. Cupping Therapy: An Overview from a Modern Medicine Perspective. Journal of Acupuncture and Meridian Studies. June 2018; 11(3): 83-87
- Ayman A. Mohame, Xueyan Zhang et al. Evidence-based and adverse- effects analysis of cupping therapy in musculoskeletal and sports rehabilitation: A systematic and evidence-based review. Journal of Back and Musculoskeletal Rehabilitation. January 2023 36(1)
- Lorna Sams et al. The Effect of Percussive Therapy on Musculoskeletal Performance and Experiences of Pain: A Systematic Literature Review. Int J Sports Phys Ther. 2023 Apr 1; 18(2): 309-327
- Benjamin Shipton et al. Trigger Point Management. Am Fam Physician. 2023;107(2):159-164
- Abdullah et al. The medical perspective of cupping therapy: Effects and mechanisms of action. J Tradit Complement Med. 2018 Apr 30; 9 (2):90-97
- Sams L, Langdown BL, Simons J, Vseteckova J. The Effect Of Percussive Therapy On Musculoskeletal Performance And Experiences Of Pain: A Systematic Literature Review. IJSPT. 2023;18(2):309-327.