



Integrative Medicine Approaches to Chronic Pain

Megan Jolicoeur, DO, FAAFP, ABOIM, IFMCP
Assistant Professor, Dept. Family Medicine

Ariel Portera, DO, IFMCP
Assistant Professor, Dept. Family Medicine



Disclosures

- **No financial disclosures**

Learning Objectives

- Identify the pathophysiology of chronic pain
- Appreciate the need for a multimodal treatment plan for chronic pain
- Review recommendations and the evidence for non-pharmacological and integrative treatments for chronic pain

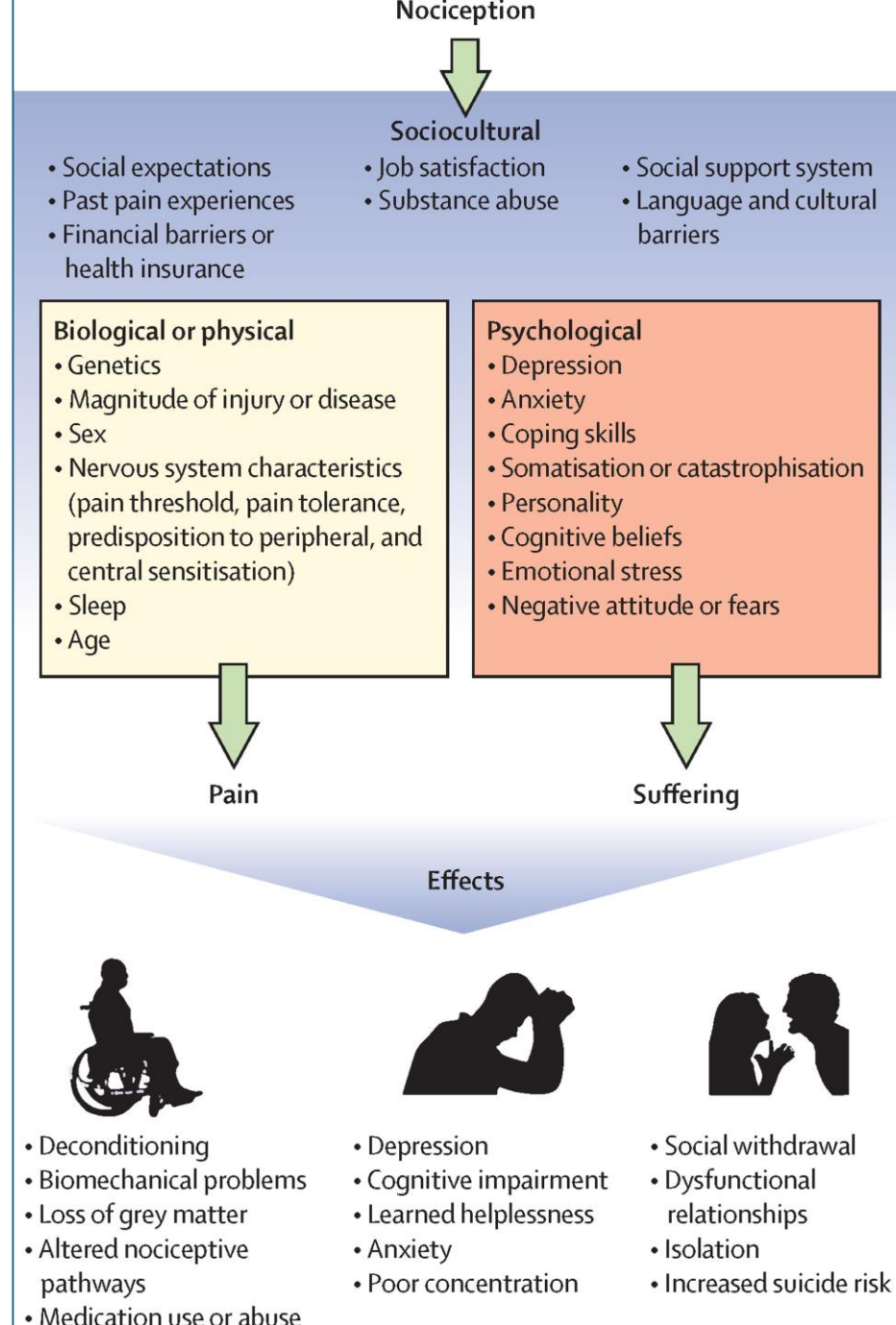
Prevalence of Chronic Pain in the US



- **According to the CDC, in 2021:**
 - 20.9% of US adults (51.6 million people) experienced non-cancer related chronic pain
 - 6.9% of adults (17.1 million people) experienced high impact chronic pain
 - Estimated annual cost of \$600 billion
- **Higher prevalence among:**
 - Females
 - Non-Hispanic American Indian or Alaska Natives
 - Identifying as bisexual
 - Divorced or separated
 - Currently unemployed but who worked previously
 - Veterans
 - Living in poverty
 - Residing in nonmetropolitan areas
 - Public health insurance

1. Rikard SM, Strahan AE, Schmit KM, Guy GP Jr.. Chronic Pain Among Adults — United States, 2019–2021. MMWR Morb Mortal Wkly Rep 2023;72:379–385. DOI: <http://dx.doi.org/10.15585/mmwr.mm7215a1>
2. Dahlhamer J, et al. MMWR Morb Mortal Wkly Rep. 2018;67(36):1001-1006.

Pain Chronification



Use of CIH for Chronic Pain



- 2012, 33% of US adults used CIM, leading indication being chronic pain
- 2016 VA added CIH approached to benefit package
- 2016-2019 70% increase in use of CIH approaches amongst veterans
 - Highest use for chronic MSK pain

What is complementary and integrative health?



According to the National Center for Complementary and Integrative Health (NCCIH):

“Alternative Medicine”

- A non-mainstream approach used in place of conventional medicine

“Complementary Medicine”

- A non-mainstream approach used together with conventional medicine

“Integrative Medicine”

- Brings complementary and conventional approaches together in a coordinated way

An Integrative Approach to Chronic Pain



Develop a holistic personalized treatment plan



Address the biopsychosocial aspects of pain



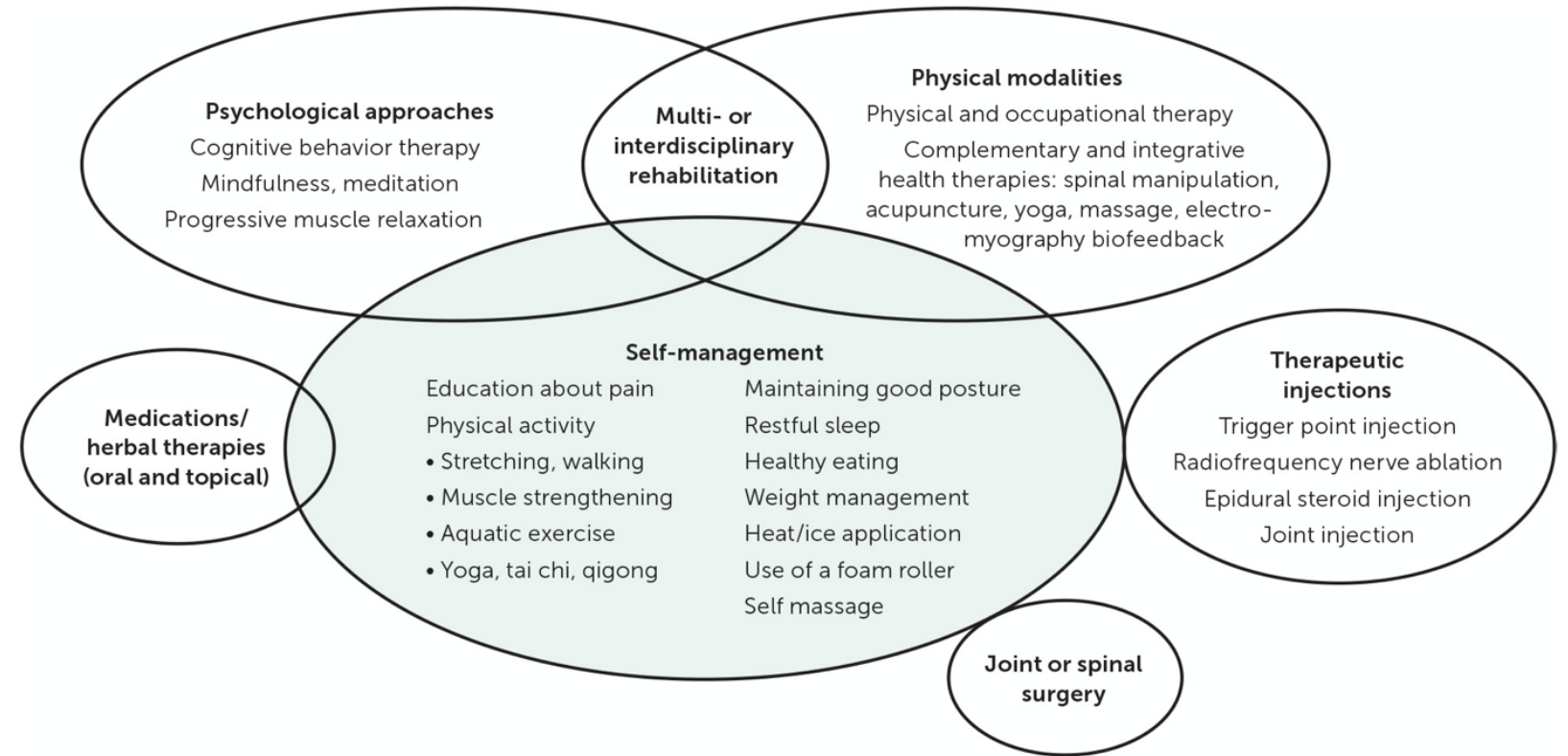
Use a multimodal approach that involves conventional and integrative modalities



Emphasize education, self-care, mindful-awareness and encourage active participation in the patient's treatment plan

National Pain Strategy

FIGURE 1.



Note: Treatments that overlap with self-management have important components of patient engagement.

Potential components of a multimodal pain treatment plan.

Pain Classification Based on Pathophysiology

Three types of pain

	NOCICEPTIVE/ INFLAMMATORY	NEUROPATHIC	CENTRAL SENSITIZATION/ NOCIPLASTIC
Stimulus	Injury or inflammation	Neural damage, pinching, irritation	Central nervous system dysfunction
Neurons	Nociceptor and non-nociceptor	Nociceptor and non-nociceptor	Non-nociceptor
Site	Peripheral and central nervous system	Peripheral and central nervous system	Central nervous system
Clinical setting	Acute trauma, post-operative, arthritis	Nerve lesions, diabetic neuropathy, shingles, carpal tunnel	Fibromyalgia and a variety of other pain disorders
Function	Protective, healing/repair, pathological	Pathological	Pathological
Pain sensitivity	High or low threshold	Low threshold	Low threshold

What is nociplastic pain?

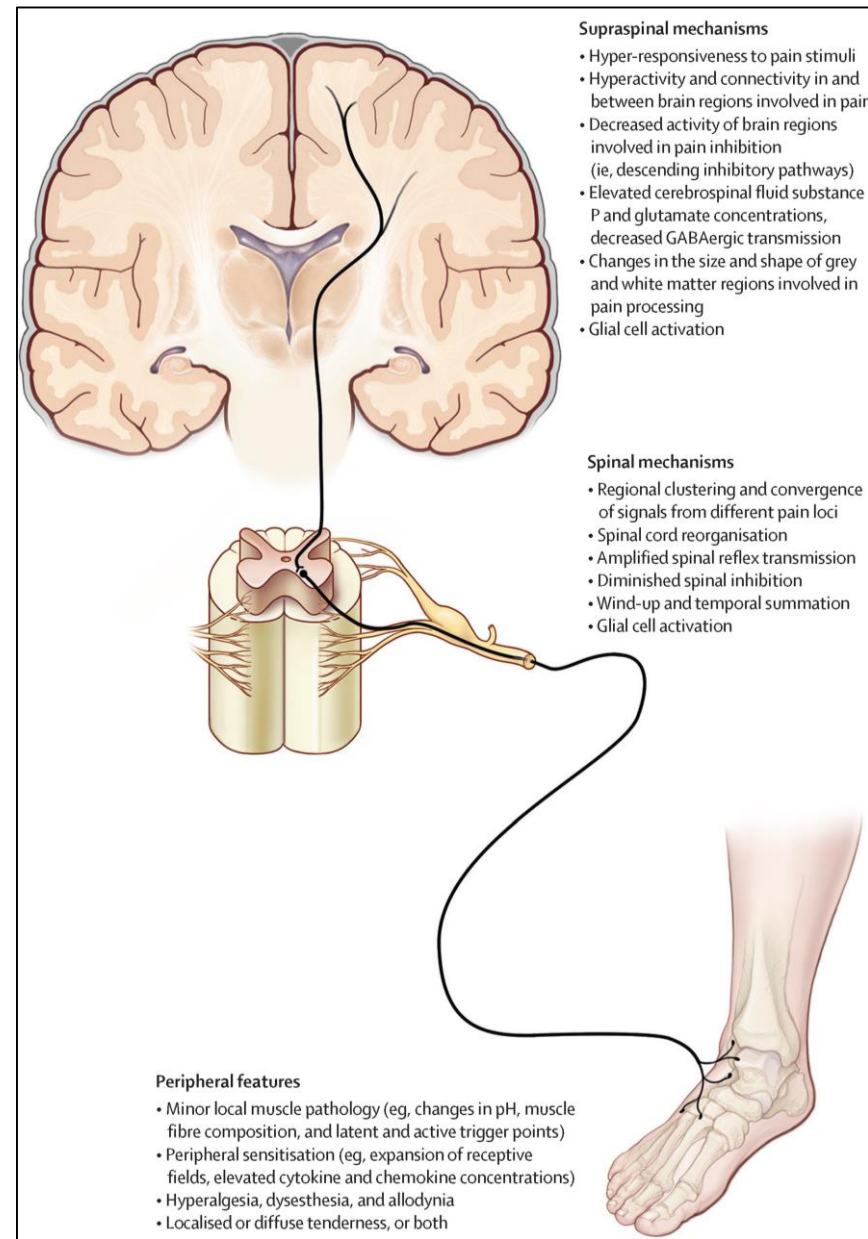


- Term designated by the IASP in 2016
- Mechanistically defined as: *“pain arising from the altered function of pain-related sensory pathways in the periphery and CNS causing increased sensitivity”*
- Can occur in isolation though often occurs in conjunction with nociceptive or neuropathic pain, ie “mixed pain”
- Provides validity for pain complaints previously identified by stigmatizing terms such as dysfunctional pain or medically unexplained somatic syndromes

Pathophysiology of nociplastic pain



- Not entirely understood
- Due to neuroplasticity that leads to hyper-excitability of the CNS
- Common denominator= amplified processing and/or decreased inhibition of pain stimuli at multiple levels in the nervous system
 - Supraspinal
 - Spinal
 - Peripheral



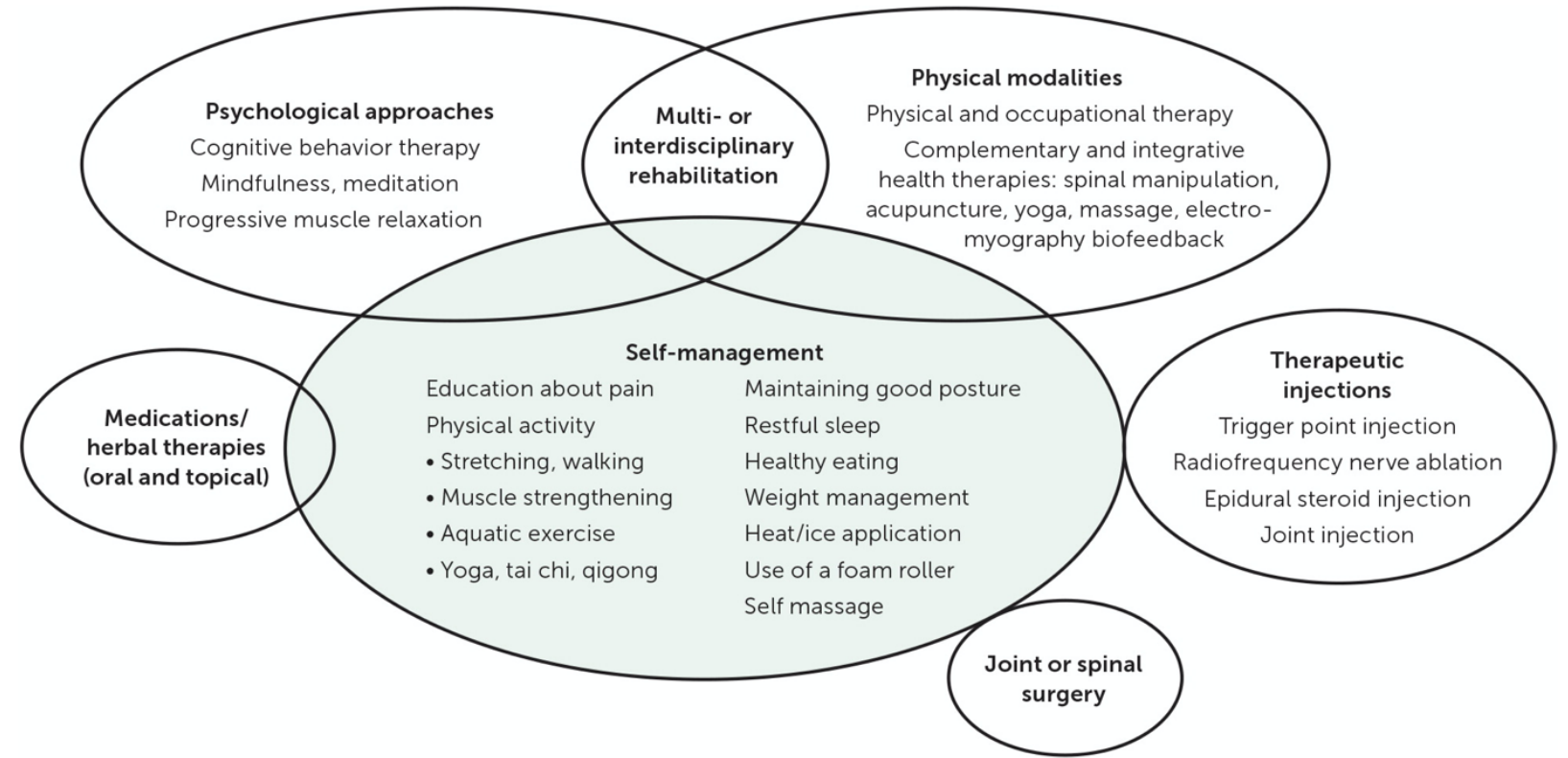
Categories of Nociceptive Pain Syndromes



1. Chronic widespread pain & fibromyalgia
2. Complex regional pain syndrome
3. Chronic primary headaches and orofacial pain
 1. Chronic TMJ
4. Chronic visceral pain syndromes
 1. IBS
 2. Interstitial cystitis
5. Chronic primary musculoskeletal pain
 1. Chronic non-specific low back pain

National Pain Strategy

FIGURE 1.



Note: Treatments that overlap with self-management have important components of patient engagement.

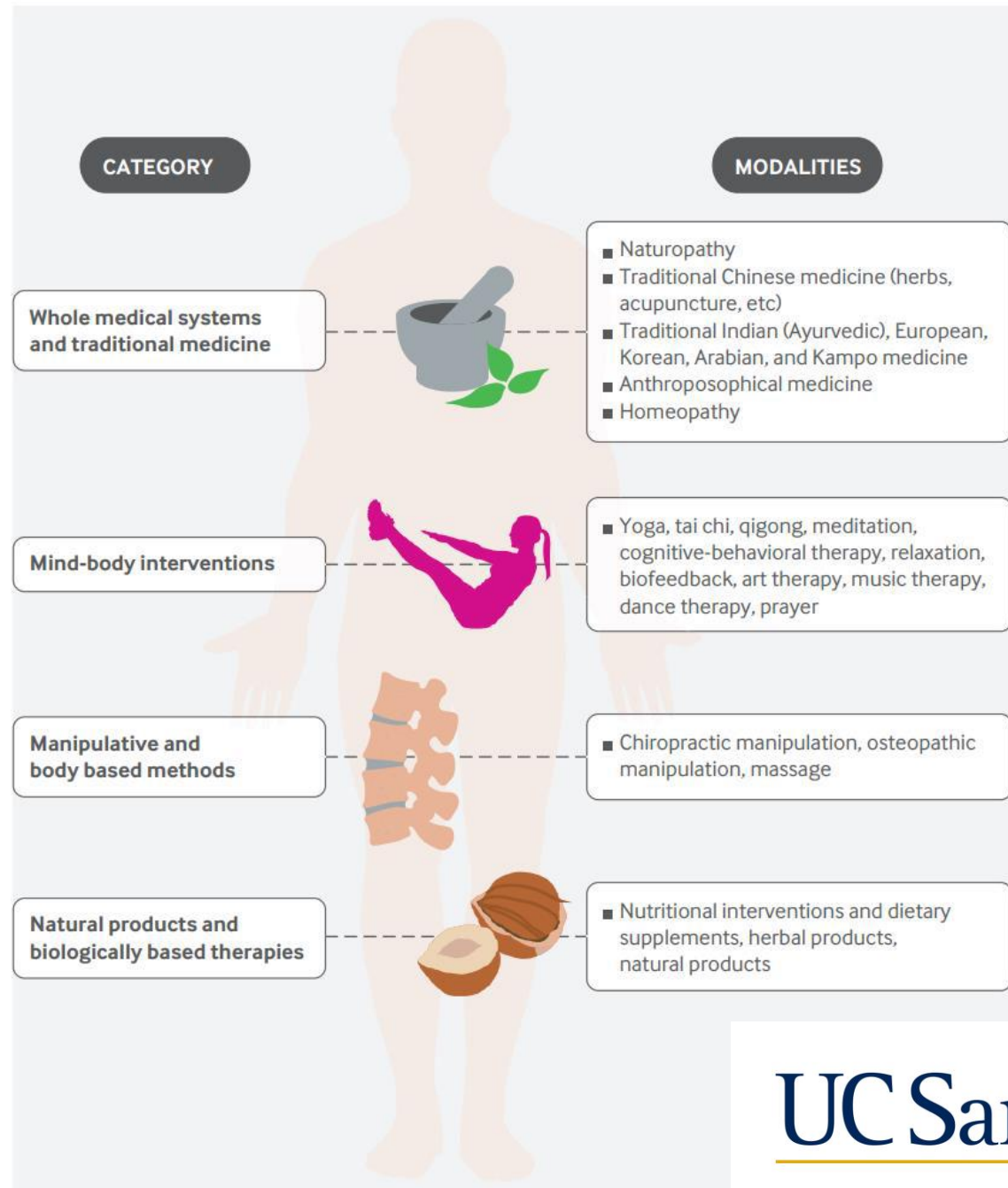
Potential components of a multimodal pain treatment plan.

Treatment of Chronic Pain

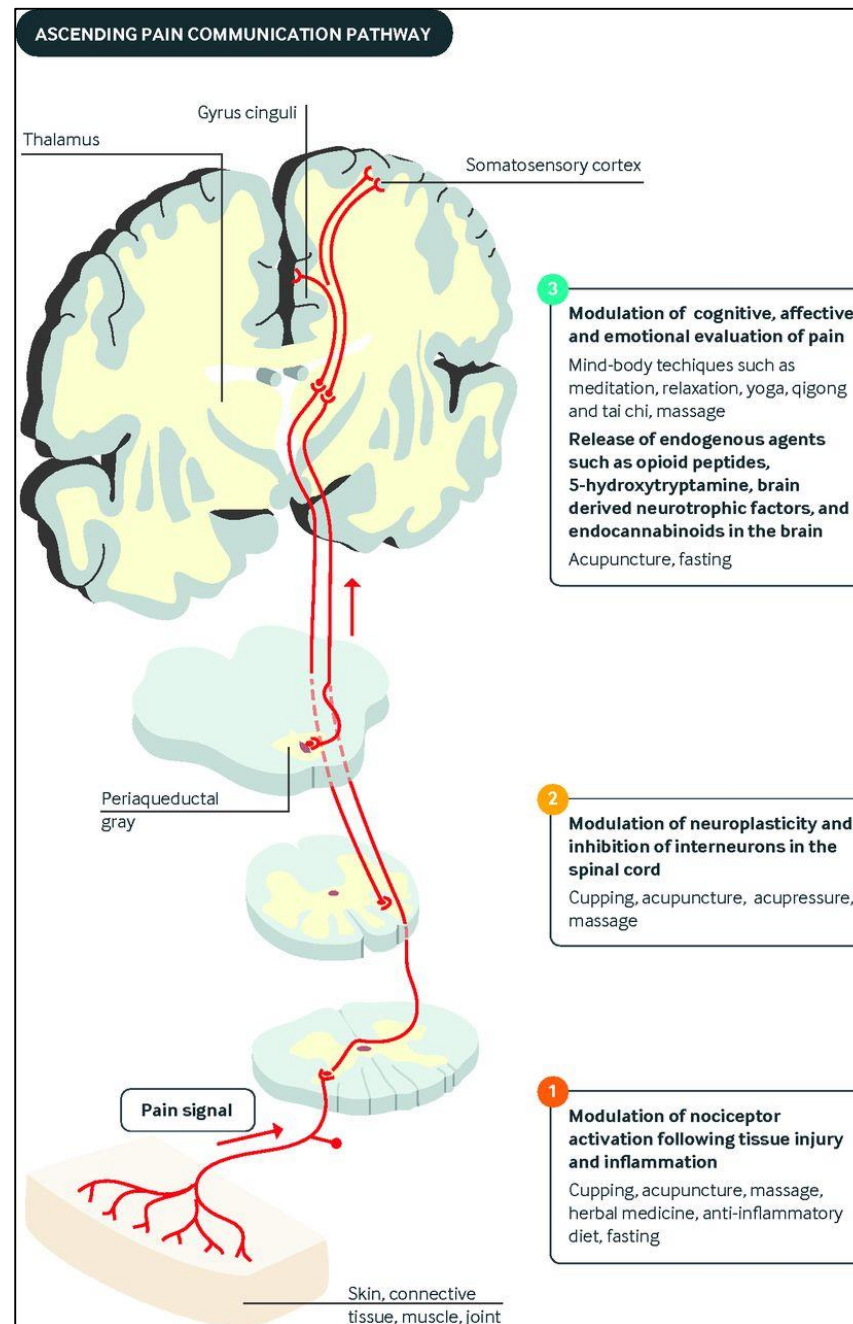
AAFP Chronic Pain Toolkit

Table D. Pharmacologic Treatments			
Class of Medication	Indications ^a	Magnitude of Benefit ^b	
		PAIN	FUNCTION
NSAIDs (topical or oral)	Low back pain, osteoarthritis, inflammatory arthritis, acute musculoskeletal (MSK) pain	Small to moderate	None to small
Acetaminophen	Acute MSK pain	Small	None
Antidepressants	Diabetic peripheral neuropathy, fibromyalgia	Small	None
Anticonvulsants	Diabetic peripheral neuropathy, fibromyalgia	Small to moderate	None (neuropathic pain) Small (fibromyalgia)
Opioids	Acute MSK pain, chronic pain, neuropathy	Small to no benefit ^c	Small to no benefit ^c
Non-Pharmacologic Treatments			
Therapy	Indications ^a	Magnitude of Benefit ^b	
		PAIN	FUNCTION
Exercise	Low back pain, neck pain, knee and hip osteoarthritis, fibromyalgia	Small to moderate	Small to moderate
Cognitive Behavioral Therapy	Low back pain, fibromyalgia	Small to moderate	Small to moderate
Massage/Acupuncture/Spinal Manipulation	Low back pain, fibromyalgia, chronic headache, neck pain	Small to moderate	Small to moderate
Yoga/Tai Chi	Low back pain, fibromyalgia	Small	Small (fibromyalgia) Moderate (low back pain)

CIM Modalities



Mechanism of Action of Integrative Modalities



Mind-Body Interventions

*“Recognizing that pain is, in fact, worsened by psychological factors makes it no less **real.**”*

-Haider Warraich, MD

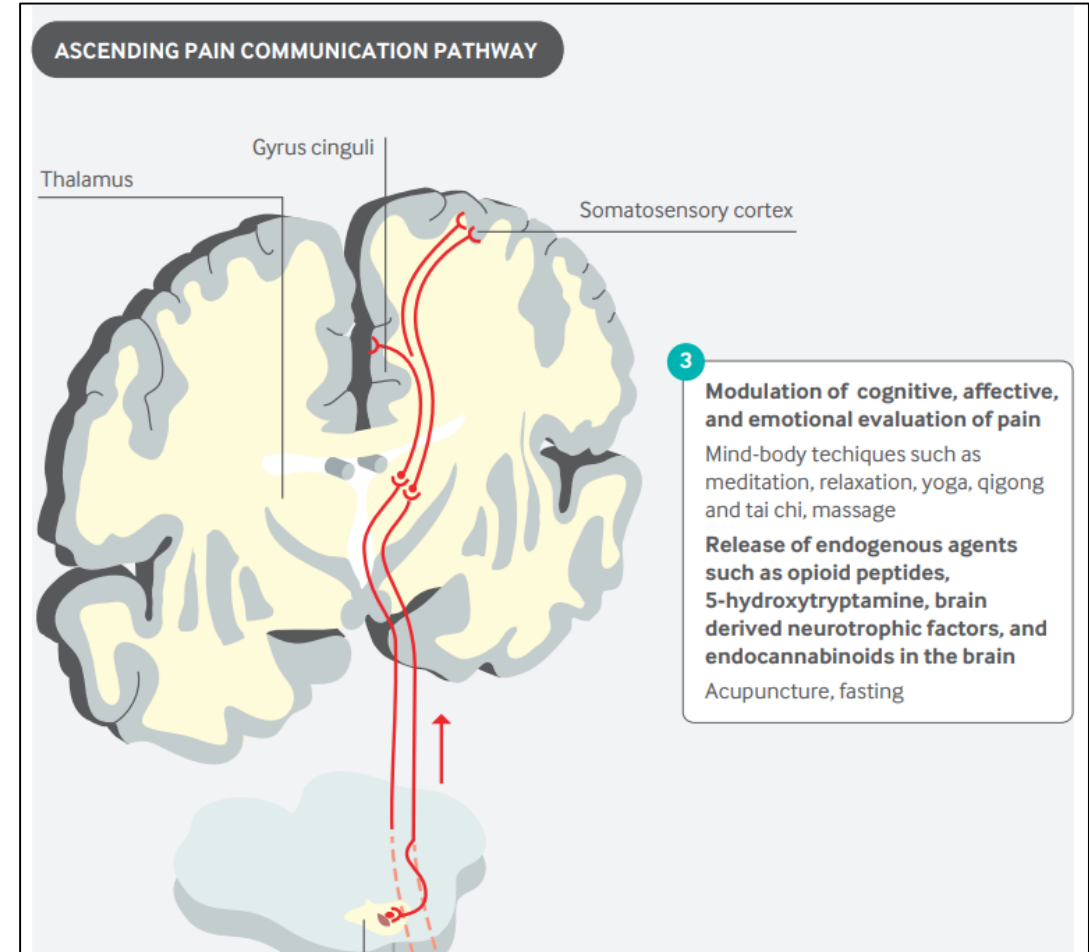
Approaching Mind-Body Interventions

- Validate the patient's pain
- Provide education regarding central sensitization and neuroplasticity of the brain
- Explain how psychosocial stressors perpetuate pain
- Describe the changes you expect to see from the mind-body therapy

Neural Basis of Mind-Body Therapies



- Relaxation response leads to beneficial physiologic effects that enhance pain relief by:
 - Reducing sympathetic activity
 - Decreasing muscle tension
 - Modulating pain awareness
 - Increased release of endogenous opioids
- fMRIs have demonstrated neurobiologic effects on brain activity and pain signaling



1. Sharon H, et al. *Am J Med.* 2016;129(7):755-758.
2. Zeidan F, et al. *Ann N Y Acad Sci* 2016;357:114-27.
3. Chen L, et al. *BMJ.* 2017;357:j1284.

Mindfulness & Meditation



- What is mindfulness?
 - *“Nonelaborative, nonjudgmental, present-centered awareness in which each thought, feeling, sensation that arises ... is acknowledged and accepted as it is.”- Scott Bishop, PsyD*
- Role for mindfulness in chronic pain
 - Alters perception of pain, increases pain tolerance
 - Preliminary data suggests that meditation results in uncoupling of normal pain processing systems from levels of consciousness

Mindfulness



- **2022 *JAMA* RCT:**
 - Mindfulness-Oriented Recovery Enhancement (MORE) vs supportive group therapy for patients with both chronic pain and opioid misuse

Findings In this randomized clinical trial that included 250 adults with both chronic pain and opioid misuse, 45.0% of participants receiving Mindfulness-Oriented Recovery Enhancement (MORE) were no longer misusing opioids after 9 months of follow-up compared with 24.4% of participants receiving supportive group psychotherapy. Participants receiving MORE also reported significant improvements in chronic pain symptoms compared with those receiving supportive psychotherapy.

Mindful Movement



Yoga

- 2017 study at VASD assessing impact of yoga on chronic low back pain
- **Intervention:**
 - 150 adults with CLBP randomized to yoga or delayed yoga
- **Results:**
 - Yoga 2x/week decreased pain intensity at 12wks and 6mo
 - Opioid use declined



Groessl EJ, et al. *Am J Prev Med*. 2017;53(5):599-608.

Mindful Movement



Qi Gong:

- May reduce pain intensity of chronic low back pain and neck pain
- 2025 pilot study done in Veterans with chronic low back pain
 - All pain related outcomes improved, sleep improved

Tai Chi:

- A review of 18 RCTs found that tai chi provided immediate relief from chronic pain from OA and low back pain
- A trial of 66 people with fibromyalgia found that those who took tai chi classes twice a week reported less pain, fewer depressive symptoms, and better sleep

1. N Engl J Med. 2010 Aug 19;363(8):743-54
2. Sci Rep 2016 Apr 29;6:25325
3. Engl J Med. 2010 Aug 19;363(8):743-54

Pain Reprocessing Therapy (PRT)



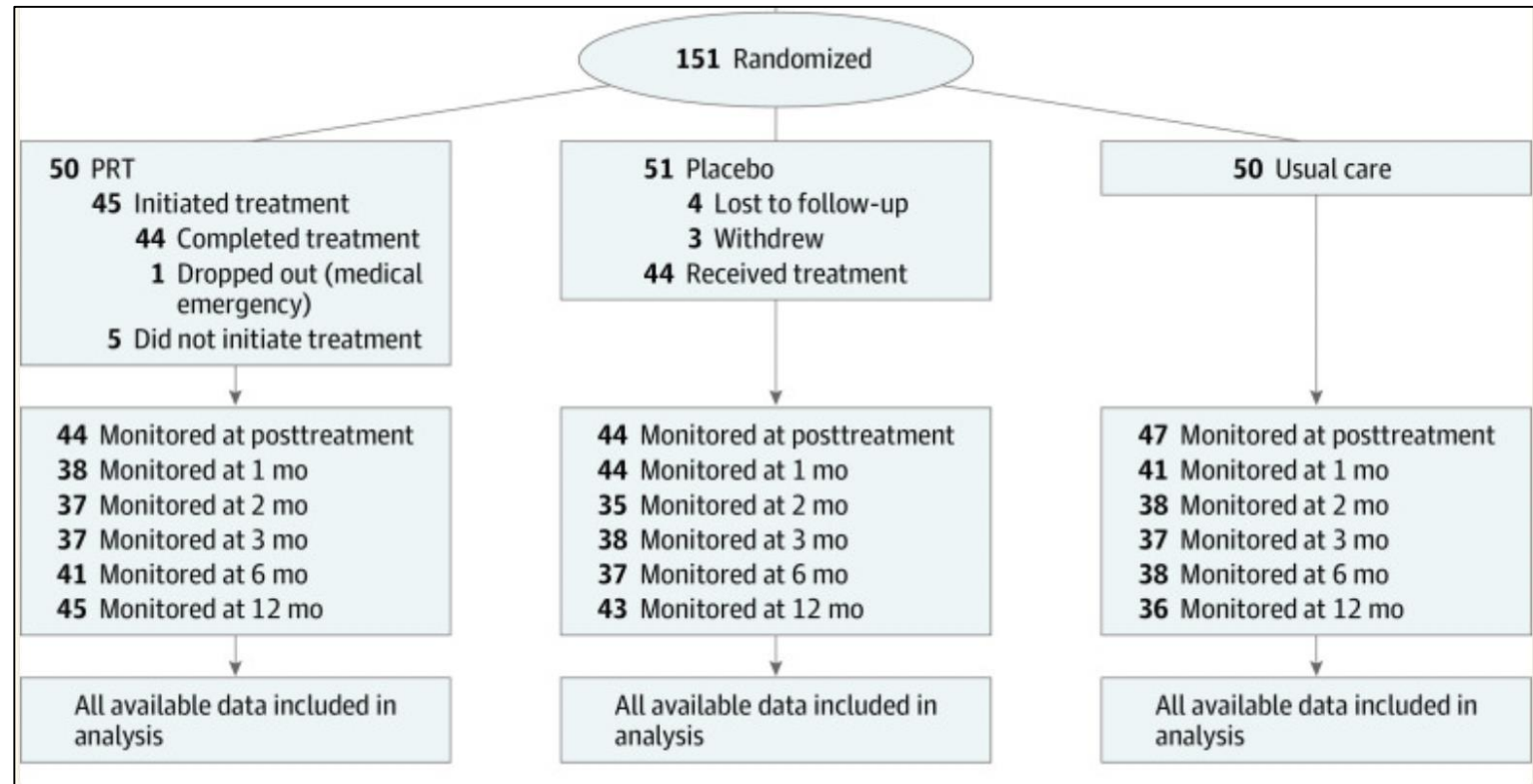
- Mind-body intervention for primary chronic pain/nociplastic pain
- Aimed to help patients reconceptualize their pain as due to nondangerous brain activity rather than peripheral tissue injury
- **5 components:**
 1. Education about the brain origins and reversibility of nociplastic pain
 2. Gathering and reinforcing personalized evidence for the brain origins and reversibility of pain
 3. Attending to and appraising pain sensations through a lens of safety
 4. Addressing other emotional threats
 5. Gravitating to positive feelings and sensations

Pain Reprocessing Therapy (PRT)



JAMA Psychiatry 2021 Boulder Back Pain Study

- RCT 1 month treatment period
- Usual Care (waitlist group) N=50
- Open label Placebo (saline injection) N= 51
- Pain Reprocessing Therapy: N= 50
 - 1 hr education with physician
 - 4 twice weekly PRT sessions with therapist



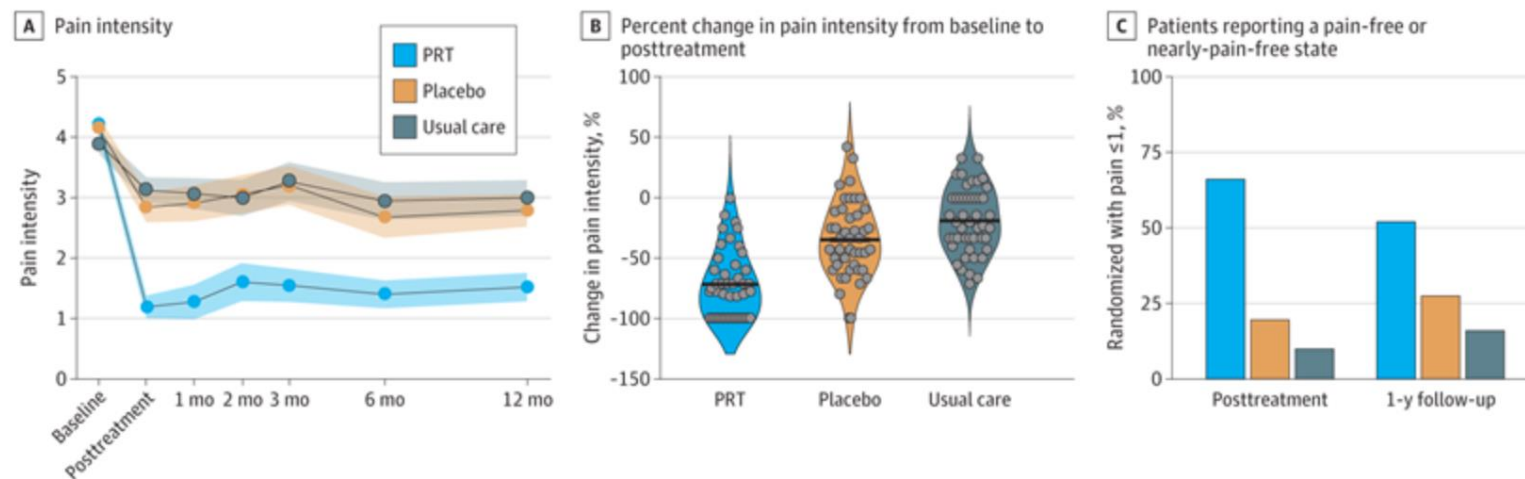
Pain Reprocessing Therapy (PRT)



Results:

- In the PRT arm:
 - 98% of patients saw improvement
 - 66% were pain free or nearly pain free
- Secondary analysis showed PRT significantly reduced pain intensity and fear avoidance behaviors

Figure 2. Clinical Outcomes



1. Ashar YK, et al. *JAMA Psychiatry*. 2022;79(1):13-23.

2. Ashar YK, et al. *JAMA Netw Open*. 2023;6(9):e2333846 .

Pain Reprocessing Therapy (PRT)



- Follow up fMRI showed the following changes:
 1. Reduced responses to evoked back pain in the anterior midcingulate and the anterior prefrontal cortex for PRT vs placebo
 2. Reduced responses in the anterior insula for PRT vs usual care
 3. Increased resting connectivity from the anterior prefrontal cortex and the anterior insula to the primary somatosensory cortex for PRT vs both control groups
 4. Increased connectivity from the anterior midcingulate to the precuneus for PRT vs usual care



Paradigm Shift for Chronic Pain



- *Evidence suggests that what is often labeled as single chronic regional pain syndrome, is upon closer evaluation, a chronic multi-symptom illness, where the pain merely occurs in different body regions at different points in time and is given different names by different sub-specialists, focusing on “their region” of the body.*

-Daniel J. Clauw, MD University of Michigan Chronic Pain and Research Center

- **CHANGE THE STANDARD OF CARE for how we CARE FOR our Pain Patient population**



APRIL 12 | Health & Wellness
Complementary therapies for chronic pain:
Acupuncture, massage and more
BY DANIEL J. CLAUW, MD
ILLUSTRATION BY MARISA GERTZ FOR TIME



UC San Diego

History



- **Patient Education.**

- Review the physiology to help them understand
- Helps to increase awareness, triggers, exacerbating factors, and how their thoughts and cognition may be relationship.
- Put the patient in the driver seat, motive change, improve self-efficiency, support control.
- **Behavioral Factors:**
 - Choice of daily activities
 - Ergo dynamics and posture
 - Exercise and eating routines
 - Stretching and massage
 - Sleep
 - Self care routines
 - Energy conservation



Figure 6. Factors associated with chronic pain.

Sleep



- **Poor sleep has an association with chronic pain (central sensitization)**
- **Insomnia is higher in patient with chronic pain**
- **Consider screening for sleep apnea**
- **Emphasizing sleep hygiene**



Husak AJ, Bair MJ. Chronic Pain and Sleep Disturbances: A Pragmatic Review of Their Relationships, Comorbidities, and Treatments. Pain Med. 2020

Nutrition



Systemic Inflammation



- **Persistent low-grade systemic inflammation is associated with chronic pain and other comorbid chronic health conditions**
- **Standard American Diet (SAD) is high in processed foods, refined sugars and saturated fats.**
- **Diet plays a complex role in modulation systemic inflammation:**
 - **Post prandial hyperglycemia, frequent and prolonged insulin levels (influenced by diet), increased adiposity -> increased secretion of pro-inflammatory cytokines in adipose tissue, liver, and skeletal muscle.**
 - **Excessive omega- 6 fatty acids relative to omega- 3 fatty acids loads the arachidonic acid pathway and contributes to pro-inflammatory states**
 - **Industrialized trans fats, hydrogenated oils can promote inflammation**
 - **ENERGY DENSE, NUTRIENT POOR- promote oxidative stress, peripheral inflammation, change in the gut microbiome-> CNS sensitization**
 - **Alterations in the gut microbiomes and association auto-immune mechanisms have also been shown to be related to systemic inflammation**

Food As Medicine



- ● ●
- **Establishing Eating Routines:**
 - Emotional Eating
- **Increase BMI may increase pain levels**
- **Dietary triggers that may make pain worse**
- **Anti-inflammatory profile- may affect pain by alternating cytokines and oxidant production**
- **Initial Goals:**
 - Review eating frequency- 3 meals per day, 12-14 hour fast
 - Encourage blood sugar regulation
 - Support weight management
 - Consider elimination diet

Research on Dietary Interventions for Chronic Pain

- **Foods and dietary constituents as anti-inflammatory and antioxidant agents**
 - **Diet has a modulatory role in chronic pain (CP) through management of inflammation/oxidative stress, resulting in attenuation of pain. Recommendation:**
 - Phenolic compounds- EVO weekly (found to be comparable to drug management therapy)
 - Lower GI carbohydrates (reduced refined carbs)- consumed every day (3 portions)
 - Fruits and vegetables (5 portions)
 - Yogurt (125 ml)
 - Red wine (125 ml)
 - Legumes and fish (four portions)
 - White meat, eggs, fresh cheese (two portions)
 - Reduced red meat (less than once per week)
 - Sweets and processed foods (reduced less than once per week)
 - **Dietary Supplements: Vit D, n-3 fatty acids, fiber and vit B12**



Research on Dietary Interventions



- **Diet and Chronic Non-Cancer Pain: The State of the Art and Future Directions-2021-Review of Systemic Reviews**
 - Fruits and Vegetables
 - Lean proteins
 - Long chain and monosaturated fats , Omega 3 rich (flax seed, chia, cold water fish)
 - Increased polyphenols
 - Phytonutrients “rainbow”, antioxidants
 - Fiber- works on the colonic production of SCFA, support the gut microbiome and immunomodulation



Nutrition and Chronic Pain



- **Ongoing area of research regarding the use of dietary interventions in rheumatologic conditions**
- **UCSD Dr. Monica Guma “ITIS diet”- supercharged Mediterranean Diet for RA including:**
 - A home-made green drink (green vegetables and fruit) every morning
 - Oily fish such as sardines, salmon or tuna 2x/week
 - A high daily intake of monounsaturated fatty acids (MUFA) from avocado, nuts, sesame seeds or sesame butter (tahini)
 - Daily chia seeds and flaxseed oil
 - Unsweetened yogurt and miso, a fermented soybean paste
 - Fruits high in enzymes, such as pineapple and papaya
 - Daily green tea
 - Turmeric (used with black pepper for better absorption) and ginger

Exercise as Medicine

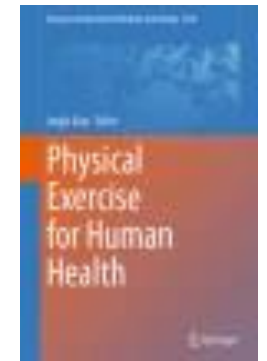


- **Physical Activity and Exercise for Chronic Pain in Adults: An Overview of Cochran Reviews (2017)**
 - Cochran Review of RCTs 381 studies 37,143 participants (pain conditions- RA, OA, fibromyalgia, low back pain, intermittent claudication, dysmenorrhea, mechanical neck disorder, spinal cord injury, postpolio syndrome, Patellofemoral pain)
 - Exercise vs no exercise/ minimal intervention
 - **Conclusion:** “The available evidence suggests physical activity and exercise is an intervention with few adverse events that may improve pain severity and physical function, and consequent quality of life. However, further research is required and should focus on increasing participant numbers, including participants with a broader spectrum of pain severity, and lengthening both the intervention itself, and the follow-up period.”

Exercise as Medicine



- **Exercise has a distinct place in the multimodal treatment of most conditions associated with chronic pain, even if direct benefits of exercise may be small.**
 - Individualized Program, patient should have control in choosing their exercise
 - Start slow – short duration, low intensity, increase very gradually.
 - Graded exercises programs without inducing pain flares
 - Selecting appropriate activity, establishing a routine.
 - Consult PT, Aqua PT, OT specialists
 - Work on proper body mechanics
 - Support body mechanics: education on bending, lifting (example- Feldenkrais method)
 - Ergodynamics: ie work, driving, sleep.



Physical Treatment



UC San Diego

Acupuncture



- **Dates back 2,000 years, sharpened stones and fish bones date to 6000 BCE**
- **Needles are inserted through the muscles or other subcutaneous layers of the tissue below the skin**
- **TCM theory- stimulating the flow of Qi aka life force that circulate through channels in the body called meridians**
- **Most common adverse events:**
 - **Bruising/bleeding at needle insertion**
 - **Transient vasovagal response**
 - **Nausea**
 - **Rare but possible cause of lung perforation**



1. MacPherson H, et al. *Acupunct Med* 2001;357:93-102.
2. Chen L, et al. *BMJ*. 2017;357:j1284.

Acupuncture



- **How Does Acupuncture Work:**
 - **Promotes functional recovery by stimulating Schwann cell proliferation, nerve growth factor secretion, increased brain-derived neurotrophic factor (BDNF), glial cell- derived neurotrophic factor (GDNF), as well as modulating endogenous opioids in the brain.**
 - **Anti-inflammatory response**
 - attenuating the production of inflammatory cytokines, and increasing the production of anti-inflammatory cytokines, such as IL-10, which are key to proper immune system function
 - **Reduce inflammation by activating the Vagus nerve**
 - **Reduction of cytokine storm by activating the vagal-adrenal axis (the pathway wherein the Vagus nerve signal the adrenal glands to release dopamine)**

Acupuncture



- **How Does Acupuncture Reduce Pain:**
 - Reduces pain by stimulating the function of nerve cells and reducing inflammation in the body
 - Suppress some types of pain receptors on cells and boosting production of brain chemical that enhance well-being ie endorphins, brain neurotransmitters (Natural opioids)
 - Change the concentrations of many naturally occurring substances that influence pain, such as serotonin, prostaglandins, endocannabinoids, and stress hormone cortisol
 - Electroacupuncture inhibits stress induced increases in norepinephrine, dopamine, corticosterone



Acupuncture

- ● ●
 - **Journal of Pain 2012 meta-analysis included RCTs:**
 - Acupuncture has a clinically relevant effect compared with no acupuncture control
 - **Effects appeared** to persist for at least 12 months after receiving acupuncture.
 - **Acupuncture effects** are not completely explicable in terms of placebo effects but cautioned that factors other than the specific effects of needling at correct acupuncture point locations contribute to the benefits derived from receiving acupuncture.
 - Acupuncture would be "a reasonable option" to consider in patients with chronic pain and called for additional research to determine the best way of incorporating acupuncture into the care of these patients.
 - **2018 Meta-analysis 39 RCT found acupuncture to be superior to both sham and no acupuncture for back and neck pain, OA, headaches, and shoulder pain**

Arch Intern Med. PMC: 2013 Oct 22

Arch Intern Med. 2012;172(19):1444-1453

J Pain

. 2018 May;19(5):455-474

UC San Diego

Acupuncture



- 2013 study found that acupuncture can reduce pain by releasing endorphins and by affecting areas of the brain that govern serotonin
- A 2012 study found that acupuncture relieved pain by about 50% in a study involving 18,000 participant
- **It is the recommendations of the American College of Physicians to use and recommend acupuncture as a first-line, nonpharmacological treatment for patients suffering from chronic low back pain.**

Vet Sci
. 2021 Jul 30;8(8):149

Arch Intern Med. PMC: 2013 Oct 22

UC San Diego

Massage



- **What is Massage?**
 - Techniques used to manipulate soft tissue
- **Evidence:**
 - 2017 review of 7 RCTS found that massage therapy was better than non-active therapies for reducing pain in people with arthritis
 - A 2013 review of 2 RCTs found that massage therapy may reduce pain and improve physical functioning in the short term.



Chiropractic



A healthcare discipline that focuses on the musculoskeletal system, particularly the spine. It is based on the belief that spinal misalignments (subluxations) can interfere with the body's natural healing abilities and lead to pain and other health issues.

- **Evidence:**
 - **Spinal Manipulation therapy (SMT) can be effective in managing chronic pain, especially for low back pain. Shows to reduce pain and disability compared to other treatment like standard medical care or exercise therapy.**
 - **Some evidence for neck pain, migraines, cervicogenic headaches, but further research needed.**
- **Side effects:**
 - **Common- muscle soreness/stiffness/ increased pain**
 - **Rare: Vertebral artery dissociation with high velocity techniques.**
 - **2016 AHA Scientific statement “current biomechanical evidence is insufficient to establish the claim that cervical manipulation therapy causes cervical artery dissection, clinical reports suggest that mechanical forces play a role in a considerable number of CDs”**
 -

1. Marcus DM. *Ann Intern Med.* 2017;167(11):832.
2. Bronfort G, et al. *Spine J.* 2004;4(3):335-356.
3. Fernandez M, et al. *Eur J Pain.* 2020;24(9):1687-1702.
4. Rist PM, et al. *Headache.* 2019;59(4):532-542.
5. *JAMA Netw Open.* 2018;1(1):e180106. doi:10.1001/jamanetworkopen.2018.0106

Osteopathic Medicine Medicine



- **What is Osteopathic Manipulative Medicine (OMM):**
 - Osteopathic medicine defines a concept of health care that embraces the concept of the unity of the living organism's structure (anatomy and function).
 - Complete and unique system of care that equates and correlates with the mainstream of medicine.
 - Osteopathic physicians are board-certified physicians and surgeons, with separate but equal rights to practice medicine as allopathic physicians (MDs)
- **OMM is based on the following principles:**
 - The body is a holistic unit of mind, body, and spirit.
 - The body has an inherent ability to heal itself.
 - Structure and function are interrelated.
 - Musculoskeletal dysfunction can lead to a variety of health problems.

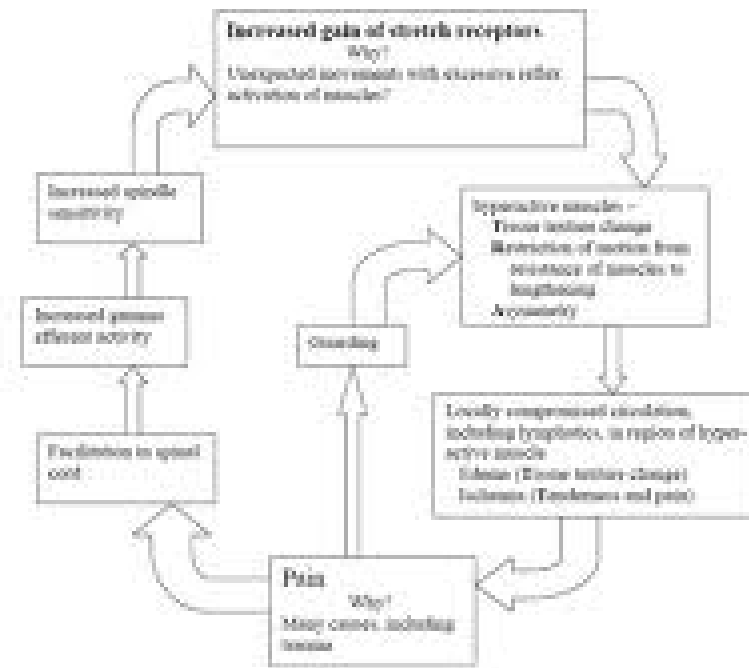


Figure 4: Osteopathic manipulative treatment of patient's muscles.

Osteopathic Manipulative Treatment

- ● ●
- **Somatic Dysfunction:**
Impaired or altered function of related components of the somatic (body framework) system: skeletal, arthrodial, and myofascial, and related vascular, lymphatic, and neural elements

Somatic dysfunction:
proprioceptive and nociceptive components



OMT Techniques



Indirect	Direct
Counterstrain	High Velocity Low Amplitude (HVLA)
Soft Tissue	Muscle Energy
Myofascial Release (MFR)	Myofascial Release (MFR)
Balanced Ligamentous Tension (BLT)	Articulatory and Combines Techniques
Facilitated Positional Release	Osteopathic in the Cranial Field

OMT Evidence



- The only clinical practice guideline established by the American Osteopathic Association recommends that OMT should be used to treat chronic low back pain in patients with somatic dysfunction.
- **A study published in the Journal of the American Osteopathic Association (JAOA) in March 2016 found that osteopathic manipulative treatment (OMT) was significantly effective in helping patients recover from chronic low back pain (LBP), particularly those with moderate to severe pain levels and individuals experiencing LBP alongside depression.**

OMT Evidence



LETTER ▶ Ther Adv Musculoskelet Dis. 2021 Jul 8;13:1759720X211029417. doi:

[10.1177/1759720X211029417](https://doi.org/10.1177/1759720X211029417)

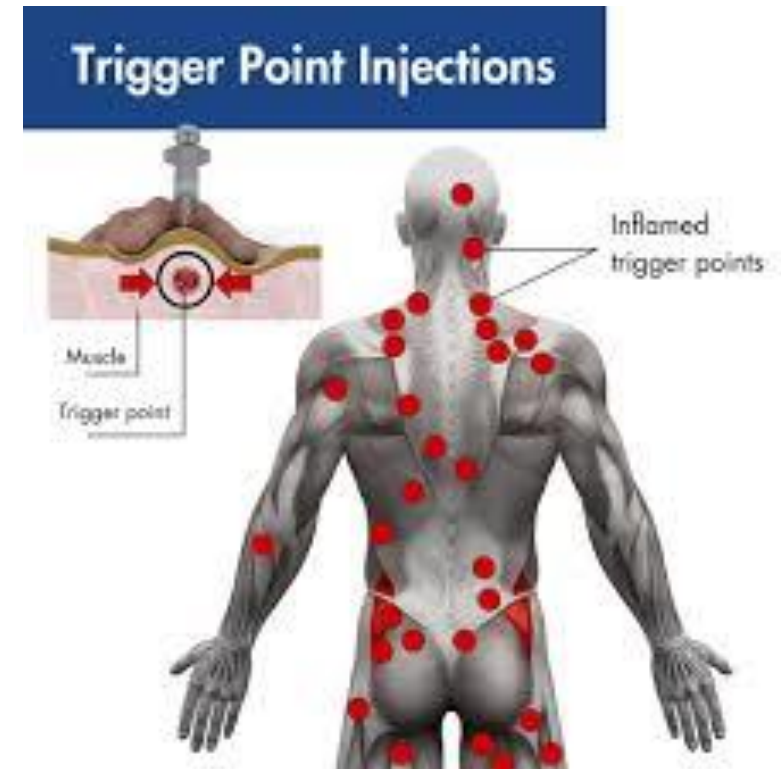
Person-centered *versus* body-centered approaches in osteopathic care for chronic pain conditions

- Multicenter RCT– Osteopathic intervention, studying osteopathy for treatment of fibromyalgia
- Conclusions/suggestions: they demonstrated that using not only a biomechanical perspective but biopsychosocial informed approach to osteopathic care can positively modulate nociplastic changes in central pain pathways.

Trigger Point Injections



- **What are Trigger Point Injections (TPI):**
 - Trigger point injections (TPIs) are a medical procedure used to treat muscle pain caused by trigger points. Trigger points are tight, tender knots of skeletal muscle tissue that can cause referred pain and other symptoms
 - Pathogenesis of trigger points is thought to be related to abnormal motor end-plates within a muscle where the motor and nociceptive nerves co-exist, with a component of enhanced central sensitization in the spinal cord.
- **Benefits:**
 - **Fibromyalgia**
 - **Headaches**
 - **Myofascial pain syndrome (MPS)**
- **Adverse reactions:**
 - **Infection, Bruising, Allergic reaction, and Temporary worsening of pain.**



Ten Unit



- **Mechanism:**
 - Works by activating “pain gate” mechanism in the spinal cord, blocking pain signals from reaching the brain.
 - Possibly stimulate the body’s natural pain-relieving systems by activating opioid receptors
- **Potential Benefits:**
 - Chronic pain- OA, fibromyalgia, phantom limb pain, neuropathic pain
- **Evidence:**
 - Lacking
 - Several studies show benefit over placebo for more localized chronic MSK pain, post-herpetic neuralgia, DM neuropathies
- **Considerations:**
 - Proper placement
 - Intensity and frequency settings
 - Possible skin irritation



Additional Resources

<https://www.nccih.nih.gov/>



U.S. Department of Health and Human Services National Institutes of Health Información en Es

NIH National Center for Complementary and Integrative Health

Search NCCIH

Health Info Research Grants & Funding Training

Home > Health Information > Pain Information for Health Professionals

Pain Information for Health Professionals

Pain is the condition for which adults in the United States most often use complementary and integrative health approaches. This includes musculoskeletal pain (back pain, neck pain, joint pain, etc.), headache, and pain associated with specific conditions (e.g., arthritis). The scientific research to date suggests that some complementary health approaches may provide modest effects that help individuals manage the day-to-day variations in their chronic pain symptoms. However, in some instances, the amount of evidence is too small to clearly show whether an approach is useful.



UC San Diego

UC San Diego

CENTERS FOR INTEGRATIVE HEALTH

Our [Centers for Integrative Health](#) support the whole-person health care guided by the mind-body-spirit connection. We foster innovative research, education, and clinical programs that have inspired an inside-out transformation of health care.

- Center for Integrative Medicine
- Krupp Center for Integrative Research
- Center for Mindfulness
- Center for Integrative Nutrition
- Center for Integrative Education



UC San Diego

UCSD Center for Integrative Medicine



- Acupuncture
- General Integrative Consults
- Health Coaching
- Integrative Nutrition (RD)
- Massage Therapy
- Mindfulness (Center for Mindfulness)
- Medical Cannabis Consultation (ND)
- Naturopathic Medicine
- Osteopathic Manual Medicine (OMM)
- Pain Reprocessing Therapy
- Supervised Lifestyle & Integrative Medicine Weight Loss Program (SLIM)

How to Place a Consult



- **See PDF**

Questions

