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The Treatment of Chronic Pain with Acupuncture and Mind-Body-Medicine

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 Disclosures

- I have no relevant financial interests to disclose.

2 

 Objectives

- Participants will gain understanding in the role of acupuncture and mind-body medicine in addressing chronic pain.
- Participants will gain insight into the mechanisms of action and research behind acupuncture and mind-body interventions.
- Participants will gain understanding into how skills-based practices such as mindfulness, tai chi and qi gong can reduce chronic pain.

3 

Why?

- Enough prescription painkillers were prescribed in 2010 to medicate every American adult around-the-clock for a month.⁽¹³¹⁾
- Estimated costs of treating chronic pain in the United States are \$600 billion annually.⁽¹³²⁾
- The United States consumes 99% of the world's hydrocodone.⁽¹³³⁾
- As of 2011, 40 people die each day as a result of overuse of prescription pain killers.⁽¹³⁴⁾
- 2007-2014, opioid dependence rose by 3,203% among patients privately insured.⁽¹³⁵⁾

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What is integrative medicine?

• **Integrative Medicine (IM)** is healing-oriented **medicine** that takes account of the whole person, including all aspects of lifestyle. It emphasizes the therapeutic relationship between practitioner and patient, is informed by evidence, and makes use of all appropriate therapies.

--from Arizona Center for Integrative Medicine

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What is Acupuncture?

- Acupuncture is medical therapy that uses fine, single use, sterile needles to stimulate our natural capacity to heal. It is one modality of traditional Chinese medicine (TCM).
- Acupuncture has been practiced for more than 2,000 years in China.
- Acupuncture can be used as a stand alone therapy or in conjunction with accessory techniques such as electrical stimulation, cupping, dermal friction (guasha),Tui na (massage), Chinese herbal medicine and **mind-body-breath exercise known as tai chi and qi gong.**

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Acupuncturists in Minnesota...

- Licensed by the Minnesota Board of Medical Practice "L.Ac."
- Board Certified by the National Certification Commission of Acupuncture and Oriental Medicine (NCCAOM).
- Have a master's degree or greater in Acupuncture/Traditional East Asian Medicine.
- There are many subspecialties of acupuncture including: orthopedic/sports medicine acupuncture, fertility, oncology and auricular acupuncture.

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Current Recommendations by the American College of Physicians for low back pain

- **Acute or subacute low back pain** --non-drug therapies such as superficial heat, massage, **acupuncture**, or spinal manipulation. If drug therapy is desired, physicians and patients should select nonsteroidal anti-inflammatory drugs (NSAIDs) or skeletal muscle relaxants
- **Chronic low back pain**--initially select non-drug therapy with exercise, multidisciplinary rehabilitation, **acupuncture**, mindfulness-based stress reduction, **tai chi**, **yoga**, **motor** control exercise (MCE), progressive relaxation, electromyography biofeedback, low level laser therapy, operant therapy, cognitive behavioral therapy, or spinal manipulation

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New Joint Commission advisory on non-pharmacologic and non-opioid solutions for pain management

- Evidence-based, non-opioid treatment options for pain:
- Behavioral/cognitive/psychological interventions, such as **meditation techniques and progressive muscle relaxation**
 - Physical interventions, including **acupuncture, massage therapy and spinal manipulation**

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Acupuncture compared to IV Morphine in ED 1

- This was a prospective, randomized trial of acupuncture vs morphine to treat ED patients with acute onset moderate to severe pain. Primary outcome consists of the degree of pain relief with significant pain reduction defined as a pain score reduction $\geq 50\%$ of its initial value. We also analyzed the pain reduction time and the occurrence of short-term adverse effects. We included in the protocol 300 patients with acute pain: 150 in each group.
- RESULTS:** Success rate was significantly different between the 2 groups (92% in the acupuncture group vs 78% in the morphine group $P < .001$). Resolution time was 16 ± 8 minutes in the acupuncture group vs 28 ± 14 minutes in the morphine group ($P < .005$). Overall, 89 patients (29.6%) experienced minor adverse effects: 85 (56.6%) in morphine group and 4 (2.6%) in acupuncture group ($P < .001$). **No major adverse effects were recorded during the study protocol. In patients with acute pain presenting to the ED, acupuncture was associated with more effective and faster analgesia with better tolerance.**

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Acupuncture for Chronic Pain Individual Patient Data Meta-analysis 2

Background Although acupuncture is widely used for chronic pain, there remains considerable controversy as to its value. We aimed to determine the effect size of acupuncture for 4 chronic pain conditions: back and neck pain, osteoarthritis, chronic headache, and shoulder pain.

Methods We conducted a systematic review to identify randomized controlled trials (RCTs) of acupuncture for chronic pain in which allocation concealment was determined unambiguously to be adequate. Individual patient data meta-analyses were conducted using data from 29 of 31 eligible RCTs, with a total of 17 922 patients analyzed.

Results In the primary analysis, including all eligible RCTs, acupuncture was superior to both sham and no-acupuncture control for each pain condition ($P < .001$ for all comparisons). After exclusion of an outlying set of RCTs that strongly favored acupuncture, the effect sizes were similar across pain conditions. Patients receiving acupuncture had less pain, with scores that were 0.23 (95% CI, 0.13-0.33), 0.16 (95% CI, 0.07-0.25), and 0.15 (95% CI, 0.07-0.24) SDs lower than sham controls for back and neck pain, osteoarthritis, and chronic headache, respectively. The effect sizes in comparison to no-acupuncture controls were 0.55 (95% CI, 0.51-0.58), 0.57 (95% CI, 0.50-0.64), and 0.42 (95% CI, 0.37-0.46).

Conclusions **Acupuncture is effective for the treatment of chronic pain and is therefore a reasonable referral option. Significant differences between true and sham acupuncture indicate that acupuncture is more than a placebo.**

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Recent study published in the BMJ-Observational retrospective study of the association of initial healthcare provider for new-onset low back pain with early and long-term opioid use 3

- Design A retrospective cohort study of patients with new-onset LBP from 2008 to 2013.
- Setting The study evaluated outpatient and inpatient claims from patient visits, pharmacy claims and inpatient and outpatient procedures with initial providers seen for new-onset LBP.
- Participants 216 504 individuals aged 18 years or older across the USA who were diagnosed with new-onset LBP and were opioid-naive were included. Participants had commercial or Medicare Advantage insurance.
- Exposures The primary independent variable is type of initial healthcare provider including physicians and conservative therapists (physical therapists, chiropractors, acupuncturists).
- Main outcome measures Short-term opioid use (within 30 days of the index visit) following new LBP visit and long-term opioid use (starting within 60 days of the index date and either 120 or more days' supply of opioids over 12 months, or 90 days or more supply of opioids and 10 or more opioid prescriptions over 12 months).
- Kazis LE, Ameli O, Rothendler J, et al. Observational retrospective study of the association of initial healthcare provider for new-onset low back pain with early and long-term opioid use. *BMJ Open* 2019;9:e028633. doi: 10.1136/bmjopen-2018-028633

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Observational retrospective study of the association of initial healthcare provider for new-onset low back pain with early and long-term opioid use⁽⁵⁾

- Initial provider was associated with early and long-term opioid use outcomes in the adjusted multivariate models... **Compared with seeing a PCP as initial provider, patients who first saw conservative therapists (chiropractor, acupuncturists and physical therapists) all had significantly decreased odds of both early and long-term opioid use.** For early opioid use, patients initially visiting chiropractors had 90% decreased odds (95% CI 0.09 to 0.10) while those visiting an acupuncturists had 91% decreased odds (95% CI 0.07 to 0.12) and those visiting physical therapists had 85% decreased odds (95% CI 0.13 to 0.17). **Chiropractors, acupuncturists and physical therapists all had major decreased odds of long-term opioid use compared with those who initially saw PCPs...**⁽⁶⁾

5. Kazis LE, Arnett O, Rothertter J, et al. Observational retrospective study of the association of initial healthcare provider for new-onset low back pain with early and long-term opioid use. *BMC Open* 2019;9:028633. doi: 10.1136/bmjopen-2018-028633


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So, how does acupuncture work?

Bio-Medicine	Traditional Chinese Medicine
As segmental analgesia, acupuncture may inhibit the nociceptive pathways.	Acupuncture is believed to stimulate our natural capacity to heal. This vital function is often referred to in Traditional Chinese Medicine as "qi".
Acupuncture releases β -endorphin in the brain and enkephalin in the spinal cord.	The word "qi" is a lexeme with no one word that encapsulates it's meaning. "Qi" is often referred to as "vital function".
Acupuncture stimulates type II/III nerves in muscles and promotes local blood flow to aid in tissue healing	Acupuncture, tui na massage and mind-body-breath exercise are believed to promote circulation, reduce pain and aid in healing
Acupuncture can be used to stimulate myofascial trigger and/or motor points.	There is direct correlation between MTP, motor points and MTP referral pathways and traditional acupuncture points, ashi points and pathways.

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Acupuncture may play a role in rewiring the primary somatosensory cortex in Carpal Tunnel Syndrome⁽⁵⁾



- Study overview. (A) Study design of randomized control neuroimaging trial with acupuncture intervention; multi-modal assessments were conducted at baseline, post-acupuncture, and 3-month follow-up. (B) Location of acupoints for all three study arms: local (verum, near the more affected hand), distal (verum, near contralesional ankle), and sham (non-penetrating needles over non-acupoints near the more affected hand). Acupoints where electrical stimulation was provided via electrodes attached to needles (i.e. electro-acupuncture) are marked (lightning bolt). fMRI = functional MRI.⁽⁶⁾

5. Maeda, Yumi et al. "Rewiring the primary somatosensory cortex in carpal tunnel syndrome with acupuncture." *Brain: a journal of neurology* vol. 140,4 (2017): 914-927. doi:10.1093/brain/aww014

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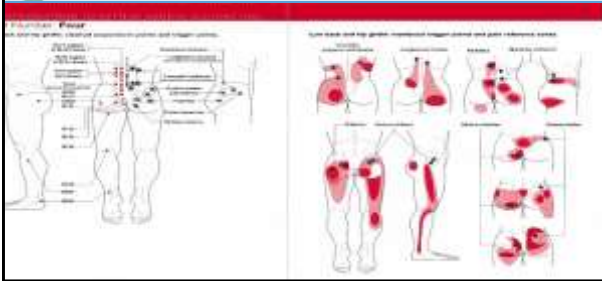
Rewiring the primary somatosensory cortex in carpal tunnel syndrome with acupuncture (5)

- Schematic summarizing CTS response to acupuncture therapy.
- (A) While distal acupuncture at the leg can modulate median nerve function via indirect S1 interhemispheric neuroregulatory pathways, local acupuncture can modulate median nerve function at the wrist via both indirect (e.g. S1 influences on the central autonomic control of local vasa nervorum) and direct pathways (e.g. direct axon reflex mediated control of local vasa nervorum).
- (B) Our results demonstrate that electro-acupuncture can produce improvement in symptoms, median nerve function, and S1 neuroplasticity, with objective changes following therapy (median nerve function, functional S1 neuroplasticity) directly predicting long-term symptom improvement.
- **Our study further suggests that improvements in primary somatosensory cortex somatotopy can predict long-term clinical outcomes for carpal tunnel syndrome.**

Miyata, Yumi et al. "Rewiring the primary somatosensory cortex in carpal tunnel syndrome with acupuncture." *Brain : a journal of neurology* vol. 140,4 (2017): 924-937. doi:10.1093/brain/awx011 (5)

Acupuncture points, trigger points, motor points...East Meets West

Images from-An Introduction to Western Medical Acupuncture by Adrian White, Mike Cummings and Jacqueline Filshie, 2018, Elsevier



What is mind-body medicine?

- Mind-body medicine focuses on: The interactions among the brain, the rest of the body, the mind, and behavior. The ways in which emotional, mental, social, spiritual, experiential, and behavioral factors can directly affect health.(National Institute of Health)

Experience of Pain is Individualized

Many factors affect the pain experience:

- History of traumatic experiences
- Past and current stresses
- Thoughts and emotions about pain
- Past experience with pain
- Implications of pain on daily life

19



Role of Thoughts and Feelings on pain

Thoughts:

- Why doesn't it get better?
- What treatment should I choose?
- Will I still be able to work?
- Are the doctors missing something?
- Did I do something wrong or is this my fault?

Emotions: anxiety, fear, anger, sadness, frustration

20



Chronic Pain

Chronic pain often requires a whole person approach as there are multiple factors that contribute to chronic pain

- Stress
- Sleep
- Diet
- Depression and anxiety
- Lack of movement/fear of movement

21



Connection of body-mind-emotion



- "... Central to this is the concept of qi as a matter-energy that gives rise to physical or mental and emotional phenomena at the same time. Thus, in Chinese Medicine, body, mind and emotions are an integrated whole with no beginning or end" (8)

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22

TCM modalities of tai chi and qi gong



- Tai Chi and qi gong are mind-body-breath exercises that are often referred to as **mediation in motion**.
- They offer a safe and effective way to reduce pain, promote relaxation, strength, flexibility, balance and coordinated movement.
- Tai Chi can be taught as martial art.
- Qi gong is often used to cultivate health and healing.
- Tai chi has been shown to reduce pain catastrophizing.(4)

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23

Mindfulness

- Mindfulness is awareness that arises through paying attention, on purpose, in the present moment, non-judgmentally.
- Mindfulness allows awareness of thoughts and emotions without having to react to them.
- After 4 days of mindfulness meditation training, meditating in the presence of noxious stimuli significantly reduced pain unpleasantness by 57% and pain intensity rating by 40% when compared with rest.(18)

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24

Are Mindful Exercises Safe and Beneficial for Treating Chronic Lower Back Pain? A Systematic Review and Meta-Analysis of Randomized Controlled Trials. (25)

- **BACKGROUND:** Tai Chi, Qigong, and Yoga, as the most widely practiced mindful exercises, have promising effects for CLBP-specific symptoms.
- ...Two investigators independently selected 17 eligible randomized controlled trials (RCT)...

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Are Mindful Exercises Safe and Beneficial for Treating Chronic Lower Back Pain? A Systematic Review and Meta-Analysis of Randomized Controlled Trials. (26)

- **RESULTS:** As compared to control groups, we observed significantly favorable effects of mindful exercises on reducing pain intensity... and disability. When compared with active control alone, mindful exercises showed significantly reduced pain intensity. ...Tai Chi has a significantly superior effect on pain management ...
- **CONCLUSION:** Findings of our systematic review suggest that mindful exercises (Tai Chi and Qigong) may be beneficial for CLBP symptomatic management. In particular, Tai Chi appears to have a superior effect in reducing pain intensity irrespective of non-control comparison or active control comparison.

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Tai chi for fibromyalgia (27)

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You can change the brain-mind-body

- From a neuroscience perspective, components such as education, mindfulness and tai chi/qi gong create positive changes in the brain that over time will reduce pain.
- Both stretching exercises, as well as exercises with a prominent stretching component (e.g. yoga, Tai Chi) have been found to decrease levels of circulating pro-inflammatory cytokines... (14)

Penny George Transforming Pain Shared Medical Visit

- The Transforming Pain Shared Medical Visit (SMV) is a skills based, upstream, non-pharmaceutical approach for the treatment and prevention of chronic pain. Combining the latest evidence based neuroscience understanding of chronic pain with the wisdom of traditional Chinese medicine, this program utilizes group synergy, mindfulness, tai chi, qi gong and education to reduce patients' pain and improve their quality of life. The program consists of 8 weekly visits of 2.5 hours and are billed to patients' insurance.

An East meets West Approach


In traditional Chinese Medicine	In western medicine and neuroscience
Where there is pain there is lack of free flow.	Chronic pain is a condition involving the brain and nervous system.
This lack of free flow is due to physical, emotional and mental factors	The experience of pain is sensory (how it's felt), cognitive (what you think about it) and affective (what you feel about it).
Unexpressed or overindulged emotions can be the cause of dis-ease and pain.	Many factors affect the pain experience: History of traumatic experiences Past and current stresses Thoughts and emotions about pain.
Living with chronic pain ultimately affects the whole person.	Pathways in the brain related to pain are strengthened through repetitive use.
From the traditional Chinese medicine perspective, mind-body practice can free the flow of qi and emotion throughout the body and promote health and healing.	From the neuroscience perspective, mind-body practice can create changes in the brain that will reduce pain.

DISCLOSURE

- No conflicts of interest to disclose

The POWER of a nutrition referral for the chronic pain patient

- Provides the body with building blocks for healing
- Optimizes nutrient status to improve outcomes
- Weight-neutral focus supports whole-person wellness
- Empowers patient's role in healing
- Reduces inflammation & pain



Who is at higher nutritional risk?

- Underweight (BMI <18.5)
- Weight loss of >10%, or >5% over 3 months, of total body weight prior to surgery
- Obesity (BMI >30)
 - J Thorac Dis 2019;11(Suppl 4):S537-S554
- Loss of functioning interfering with food choices/prep
- Grief, living alone, financial barriers, caregivers
- Lab parameters (Hemoglobin, lymphocytes, pre-albumin, Vitamin D, B12, ferritin)
- Nutrition risk index
- Inflammation!

Who is at higher nutritional risk?

• "The appreciation that *inflammation plays a major role in the pathophysiology of malnutrition* is often lacking, and many clinicians assume that weight loss is the single most important criterion for a malnourished state. This has led to frequent under-recognition of the condition."

• J Clin Med. 2019 May 31;8(6)

Patient Mary Doe (M.D.)

57 y/o F

Symptoms: Chronic neck & lower back pain, also knee/joint pain. Some worsening memory. Fatigue. GERD.

PMH: osteoarthritis, pre-diabetes, hypertension, depression.

5'4", 230# BMI 39.5. Weight has fluctuated +/- over the years, high wt 250#.

Recent weight loss of about 15# in past 2 months using low fat, low carb diet & reduced snacking. No frequent dining.

Primary goal is weight loss. Anticipating knee replacement/ and spinal fusion surgeries. Would like to lose some weight first to relieve pressure on her joints/back. Hopes it will lower her risk for diabetes.

Supplements: Occasional MVI, collagen peptides

Meds: Omeprazole, aspirin/ibuprofen

Patient M.D.

- Diet –
- B: Greek yogurt or cereal
- L: @ work café (salad/sandwich) or frozen meal & fruit.
- D: Mostly home cooked meal (meat, starch, veg)
- Fluids: diet soda, water, bottled tea.
- Snacks: protein bars – Cliff/Luna, chocolate. Less pretzels, ice cream, nuts lately.
- Physical activity – trying to increase, enjoys walking. Pain & fatigue limits.
- Stressors: caring for aging father after loss of mother, financial (2 kids in college), working part time, "a worrier".
- Hemoglobin: 12.2
- MCV: 96
- MCH: 30
- Vitamin D: 20
- Serum B12: 312
- Ferritin: 24
- HgA1c: 6.2%
- Fasting Glucose: 103
- hs-CRP: 4.5
- BP: 140/90

Patient M.D.

What are her nutrition priorities?

Patient M.D.

What are her nutrition priorities?

Is weight loss the goal?

- Does Dieting Work?
 - 1/3 to 2/3 of the weight is regained within one year (after weight loss), and almost all is regained within five years.
 - Women's Health Initiative - After ~8 years... almost no change in weight from starting point.
 - Ann Intern Med 1992;116:940-949.
 - JAMA 2006; 295:39-49.
 - "Weight cycling can account for all of the excess mortality associated with obesity in both the Framingham Heart Study and the National Health and Nutrition Examination Survey (NHANES)"
 - Nutrition Journal 2011; 10:9
- Weight loss prior to surgery may increase risk of infection & complications.
 - Bone Joint J 2014;96-B:629-35.
- "Patients w/ BMI between 18.5-40kg/m², fare equally well with regard to complications and mortality."
 - World J Surg 2015; 39: 2376-2385
- Posterior lumbar spine fusion patients with **metabolic syndrome** had significantly increased rates of length of hospital stay and cardiac complications compared to patient without metabolic syndrome.
 - Spine 2012;37:989-95.
- **Opportunity** to optimize nutrition status!

Surgical Outcomes

"Malnutrition has often been overlooked despite being one of the most modifiable risk factors for post-operative complications, length of stay, and readmission rates"

World Neurosurgery
 Published online 1 September 2019
 In Press, Forward Head

Preoperative Nutrition Consults Associated with Decreased Postoperative Complication Rate and Decreased Length of Hospital Stay After Spine Metastasis Surgery

Journal of Neurological Surgery Part B: Neurological Issues
 David H. Smith, MD, PhD, et al.

ANTI-INFLAMMATORY EATING

- Vegetables, Fruits, Nuts, Seeds, Berries, High quality proteins, Legumes, Healthful Fats, Whole grains
- Herbs & Spices
- PUFA, Omega-3 sources
- Hydration
- Limited in additives, acellular carbohydrates

Source: IFM

Food pyramid for chronic pain:
 foods and dietary constituents as anti-inflammatory and antioxidant agents

- fruit and vegetable intake inversely correlated inflammatory markers (CRP, IL 6, TNF- α) & oxidative stress
- "plants belonging to the Zingiberaceae family (i.e. turmeric, ginger, Javanese and galangal ginger) are powerful proalgesic agents, useful in chronic pain treatment. Specifically, curcumin attenuates hyperalgesia induced by Opioids."
- Rondanelli M, Falvo MA, et al. *Age Research Review*. 2018; June; 3(1): 131-151.

Vitamin D

- 60 patients attending spinal and internal medicine clinics over a 6-year period who had experienced low back pain that had no obvious cause for >6 months
- 83% (n = 299) had abnormally low levels of vitamin D before treatment with vitamin D supplements. After treatment, **clinical improvement in symptoms was seen in all the groups that had a low level of vitamin D, and in 95% of all the patients** (n = 341)

• Al Faraj S, Al Mutairi K. Spine 2003;28:177-9.

Vitamin D

- MN Prevalence of deficiency in non-specific musculoskeletal pain
 - Of all 150 patients, 93% had deficient levels of vitamin D
 - 28% of all patients had severely deficient vitamin D levels (< or = 8 ng/mL)
 - Plotnikoff GA, Quigley JM. Mayo Clin Proc. 2003;78(12):1463-1470.
- Body weight specific recommendations for optimal intake
 - doses of 1885, 2802 and 6235 IU per day are required for normal weight, overweight and obese individuals respectively to achieve natural 25(OH)D concentrations (defined as 23 to 68 ng/mL)
 - [Nutrients](#). 2015 Dec; 7(12): 10189-10208.

Omega 3 Fatty acids

- Safer alternative to NSAIDS
 - 125 patients with discogenic low back pain
 - 1200-2400mg Fish Oils
 - 59% discontinued to take their prescription NSAID medications for pain
 - no significant side effects reported

• Maroon JC, Bost JW. Omega 3 fatty acids (fish oils) as an anti-inflammatory: an alternative to non-steroidal anti-inflammatory drugs for discogenic pain. Surg Neurol. 2006 Apr;65(4):326-31

B12

- "Subacute combined degeneration (SACD) of the spinal cord
 - progressive degeneration of the spinal cord due to vitamin B₁₂ deficiency
 - Also with Vitamin E, copper deficiency
 - B12 is necessary for maintenance of myelin sheath
- Spinal changes related to B12 deficiency is difficult to detect with MRI
- Prolonged B12 deficiency → irreversible nervous system damage
- Consider with vegan, vegetarian, or long term metformin or PPI use

• Jain KK, Malhotra HS, et al. *J Neurol Sci.* 2014 Jul 15;342(1-2):162-6.

Magnesium

Oral magnesium supplementation reduces insulin resistance in non-diabetic subjects - a double-blind, placebo-controlled, randomized trial

Abstract
The incidence of insulin resistance and metabolic syndrome increases with age. Supplementation of insulin sensitivity and other characteristics of the insulin resistance syndrome (IRS) may be beneficial. Magnesium supplementation may improve insulin sensitivity and other characteristics of IRS. The aim of this study was to evaluate the effect of oral magnesium supplementation on insulin resistance and other characteristics of IRS in non-diabetic subjects. The study was a double-blind, placebo-controlled, randomized trial. The study included 100 non-diabetic subjects with IRS. The subjects were randomized to receive either oral magnesium supplementation (n = 50) or placebo (n = 50) for 12 weeks. The primary outcome was the change in HOMA-IR. The secondary outcomes were the change in fasting glucose, fasting insulin, and other characteristics of IRS. The results showed that oral magnesium supplementation significantly reduced HOMA-IR and other characteristics of IRS in non-diabetic subjects with IRS. The study provides evidence that oral magnesium supplementation may be beneficial for the treatment of IRS in non-diabetic subjects.

EJCN

Effect of magnesium supplementation on glucose metabolism in people with or at risk of diabetes: a systematic review and meta-analysis of double-blind randomized controlled trials

Abstract
Magnesium supplementation may improve glucose metabolism in people with or at risk of diabetes. The aim of this study was to evaluate the effect of magnesium supplementation on glucose metabolism in people with or at risk of diabetes. The study was a systematic review and meta-analysis of double-blind randomized controlled trials. The study included 10 studies with 1000 participants. The primary outcome was the change in fasting glucose. The secondary outcomes were the change in fasting insulin, HOMA-IR, and other characteristics of insulin resistance. The results showed that magnesium supplementation significantly reduced fasting glucose and other characteristics of insulin resistance in people with or at risk of diabetes. The study provides evidence that magnesium supplementation may be beneficial for the treatment of insulin resistance in people with or at risk of diabetes.

Magnesium

European Journal of Pharmaceutical Sciences

Volume 118, 1 March 2018, Pages 110-127

Magnesium enhances opioid-induced analgesia - What we have learnt in the past decades?

Magnesium Sulfate Calcium, 1-3-18, José Tabares-Bermejo, 1, Kanna Kalle, 1, Magdalena Páez, 1, María Hernández, 1

Abstract
Magnesium reduces opioid consumption and alleviates postoperative pain scores while not increasing the risk of side effects after opioids.

"Magnesium reduces opioid consumption and alleviates postoperative pain scores while not increasing the risk of side effects after opioids"

Patient M.D.
Rx:

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Patient M.D.
Rx:

FOOD

Anti-inflammatory diet
 More: Leafy greens, olive oil, fish
 Nuts/seeds & fruit as snacks
 Green Tea

Less: Diet sodas, breads/pastas,
 sweetened cereals & yogurts.
 Ditch calorie counting/dieting.

Meal planning support at f/u.

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Patient M.D.
Rx:

SUPPLEMENTS

High Quality Multivitamin
 Vitamin D
 Sublingual B12
 Magnesium
 Fish Oils
 Turmeric

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Patient M.D.
Rx:

LIFESTYLE

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Patient M.D.
Rx:

ADDITIONAL TESTING

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Conclusion

- Nutrition intervention has the potential to reduce chronic inflammation, chronic pain & accelerate the healing process in many stages of neuromusculoskeletal disorders
- Very low-cost and minimal risk
- Improves quality of life, outcomes
- Failure to optimize nutrition status will likely result in ongoing decline of bone health, muscular strength, and neurodegeneration, and increase complications & risks with future interventions
- Dieting alone induces catabolic state, can worsen malnutrition.

The POWER of a nutrition referral for the chronic pain patient

- Provides the body with building blocks for healing
- Optimizes nutrient status to improve outcomes
- Weight-neutral focus supports whole-person wellness
- Empowers patient's role in healing
- Reduces inflammation & pain



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THANK YOU

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