

Managing Chronic Pain:

What Are the Best Non-Drug Options?

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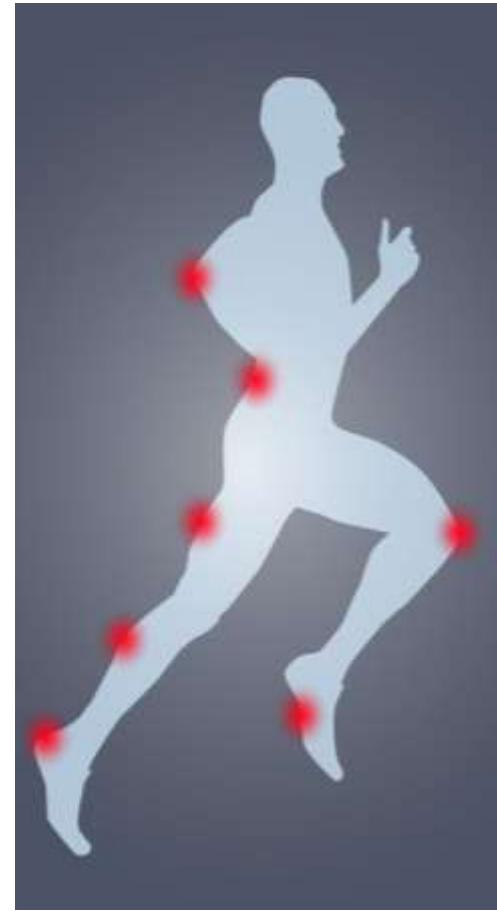
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Musculoskeletal Pain is Ubiquitous

- Everyone gets it at some time in their life – especially those who are active
- There are three main causes:
 - Acute traumatic events
 - Everyday activities that put unusual or repetitive strains on the MSK system (overuse)
 - Musculoskeletal diseases




- Joint problems affect some 43 million Americans
- Most common cause of disability in adults
- More costly than diabetes and cancer
- Numbers are increasing

DECEMBER 9, 2002

SPECIAL REPORT: TERROR'S NEW TARGETS

THIS TWAIN IS BOUND FOR GLORY



The Coming Epidemic of
ARTHRITIS

THE BAD NEWS: Research shows that the disease starts attacking your joints long before middle age

THE GOOD NEWS: The latest treatments are more effective than ever

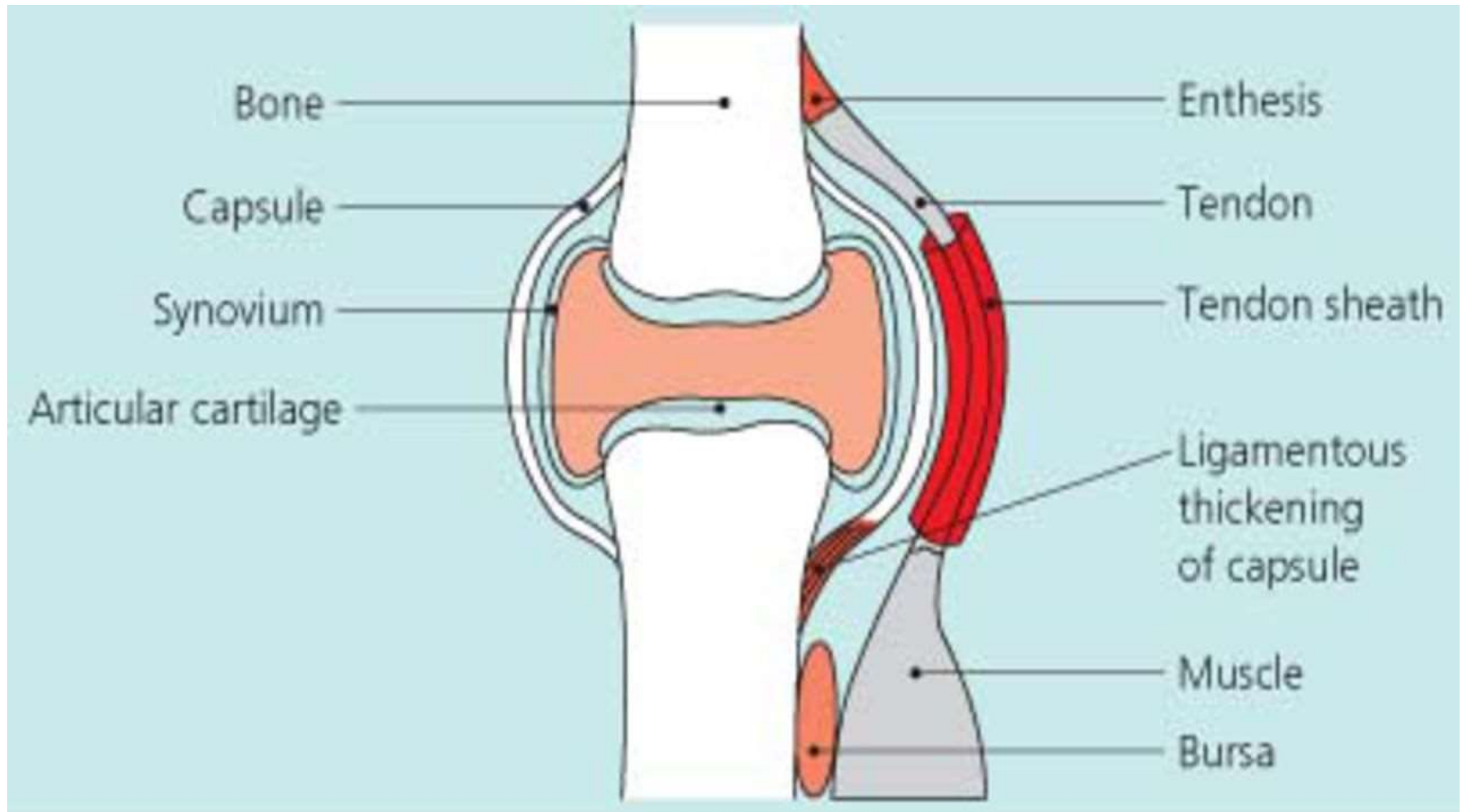
www.ama-assn.org AHA Reprints: 1188

Chronic MSK Pain

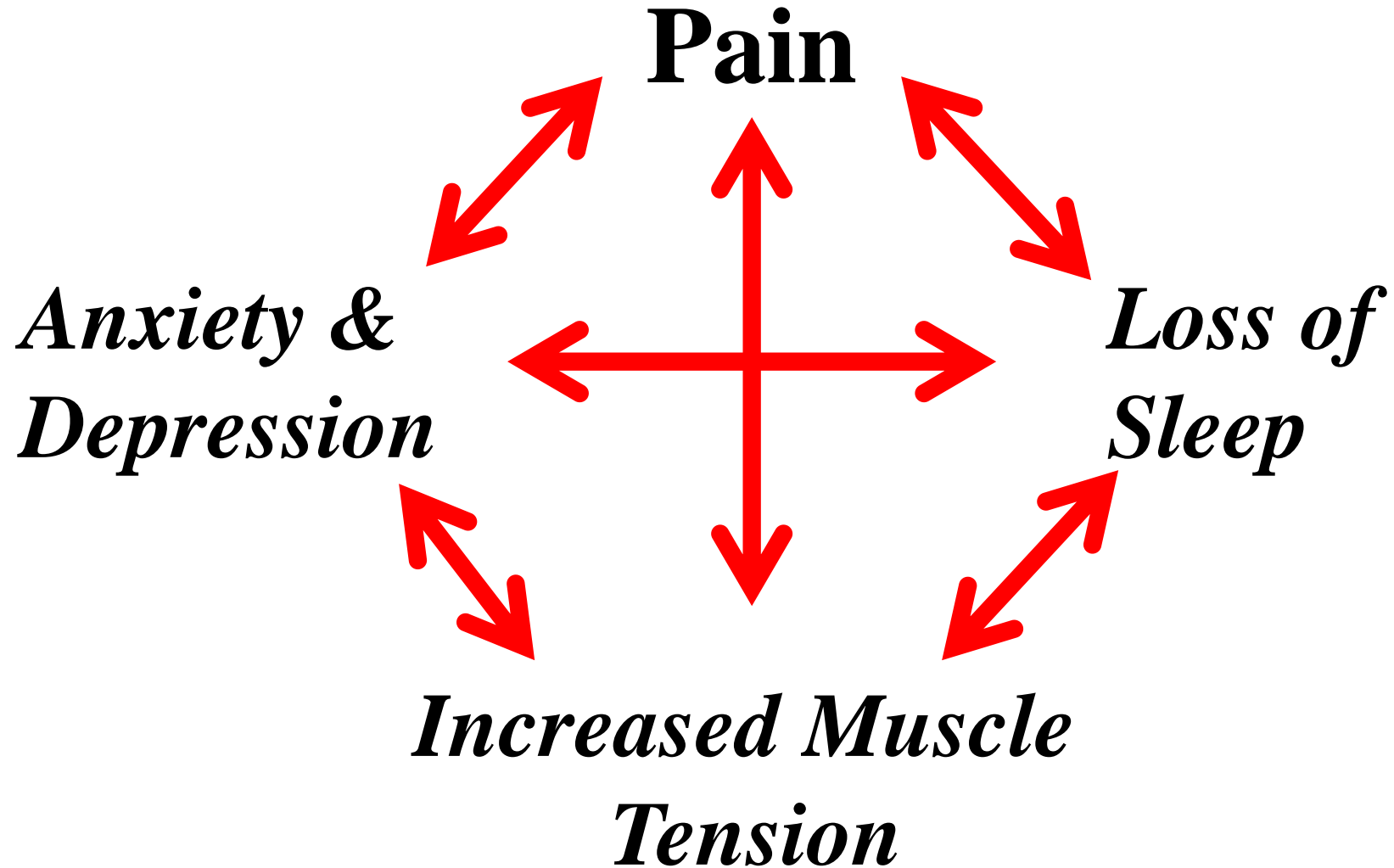
- 3 common sources of chronic pain (pain lasting >12 weeks; or beyond normal tissue healing time)
 - Referred pain (sciatica)
 - Joint problem (arthritis)
 - Structures around a joint
 - Enthesis (lateral epicondylitis)
 - Ligament (MCL strain or partial tear)
 - Tendon or its sheath (rotator cuff)
 - Bursa (greater trochanter, olecranon)
 - Muscle (strain or tear)
 - Bone (stress fracture)



Pain Generators Around a Joint



The Vicious Cycle of Chronic Pain



Osteoarthritis

- Most common joint disorder, with predilection for those over 50
- Slowly progressive, with continued breakdown of cartilage and changes in underlying bone
- Common synonyms are **osteoarthrosis** and **degenerative joint disease (DJD)**
 - Osteoarthrosis may be better term since inflammation is often mild
 - Degenerative changes are the predominant factor contributing to disability



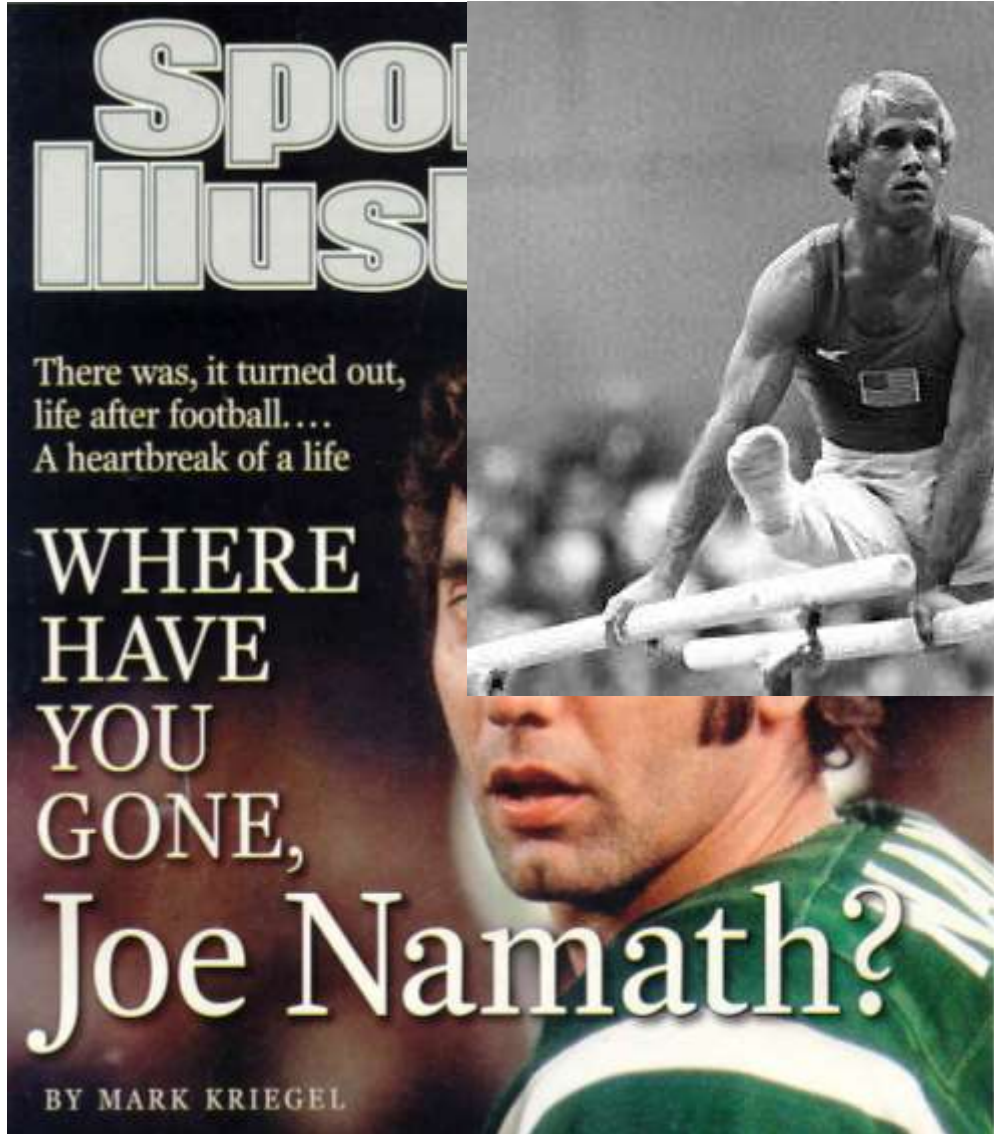
Occupational Hazard for Athletes?

SPORT ILLUSTRATED

There was, it turned out, life after football...
A heartbreak of a life

WHERE HAVE YOU GONE, Joe Namath?

BY MARK KRIEGEL

The image shows the cover of Sports Illustrated magazine. The title 'SPORT ILLUSTRATED' is at the top in a large, outlined font. Below it, a quote reads 'There was, it turned out, life after football... A heartbreak of a life'. The main headline is 'WHERE HAVE YOU GONE, Joe Namath?' in a large, bold, serif font. At the bottom, it says 'BY MARK KRIEGEL'. The background of the cover is a close-up photograph of Joe Namath's face, looking slightly to the side.

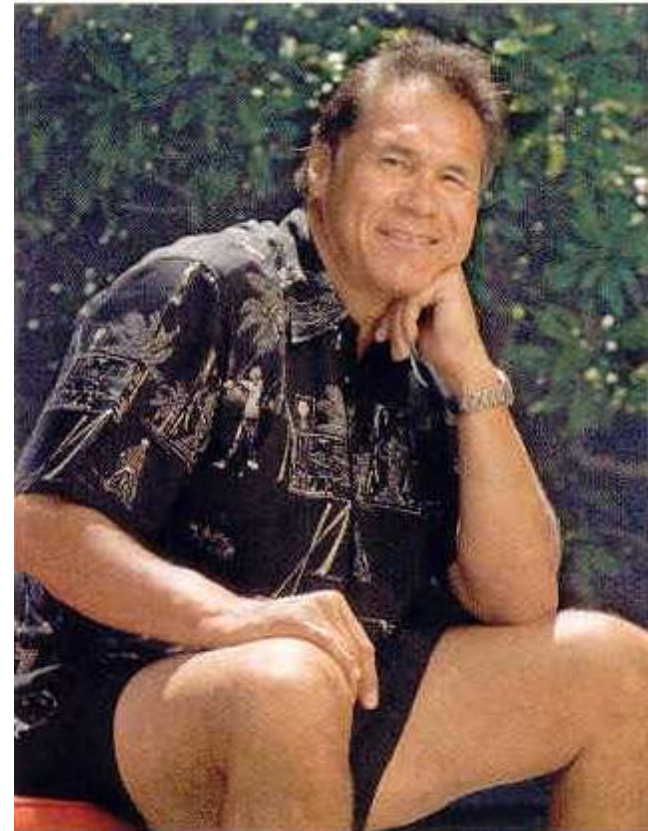
25 YEARS LATER

[JIM PLUNKETT]

Painful Reminders

The Raiders' two-time Super Bowl-winning quarterback is having a fine retirement, but his knees, shoulder, back and neck are living in the past

- “No relief, there’s never any relief. Day in, day out, I feel like crap. Don’t believe anything people say about those golden years of your life. They suck!”



Treatment Goals for MSK Pain

- Eliminating all pain is impossible
- 4 Main Goals
 - Control discomfort and swelling
 - Minimize disability
 - Improve the quality of life
 - Educate patient about their role in the management
- Subjective complaints and objective findings help guide appropriate therapy



Treatment of MSK Pain

- Paradigm shift – **non-pharmacologic measures (not drugs) should be keystone of treatment**
- Previously NSAID's (Motrin, Naprosyn) & Narcotics were primary focus
 - Studies showed only modest effectiveness in relieving pain
 - Potential serious adverse effects
- Drugs should be used as adjuncts (not alternatives) to other measures
 - Benefits of non-pharmacologic measures and drugs often additive
 - CDC recently said Non-opioid therapy is preferred when drug therapy used



Prescription Drug *Deaths*

Los Angeles Times | LOCAL

LOCAL U.S. WORLD BUSINESS SPORTS ENTERTAINMENT HEALTH LIVING TRAVEL OPINION

DYING FOR RELIEF | A TIMES INVESTIGATION

Times investigation: Legal drugs, deadly outcomes

Prescription overdoses kill more people than heroin and cocaine combined!

***>28K opioid deaths in 2014 (more than MVA's)
Equivalent of one 747 crashing each week.***

HELPED OR HOOKED?

Lynn Blunt snored loudly as her lungs slowly filled with fluid.

The Crackdown on Prescription Drugs

- 2012-13; 39% rise in Heroin related deaths
- 75% Heroin addicts previously addicted to prescription Opioids
- 90% first time users are white; Highest rise in women and wealthy
- Dramatic surge in HIV cases as well

THE WALL STREET JOURNAL. U.S.


U.S. NEWS

DEA Restricts Narcotic Pain Drug Prescriptions

Prescription Painkiller Abuse Starting to Decline: Study

Rapid rise of heroin use in US tied to prescription opioid abuse, CDC suggests

Overdose deaths quadruple in period from 2002 to 2013 as biggest increase in use is seen among users of pain relievers: 'It's a poly-substance abuse issue'



The photograph shows a small pile of brown powder on a white surface. A spoon with a wooden handle is placed next to it, containing more of the powder. A syringe with a needle is also visible, lying horizontally. The background is plain white.

Dr. Lisa Tseng

Rowland Heights, CA GP

SECTIONS

Los Angeles Times

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WEDNESDAY MAY 18, 2016

MOST POPULAR LOCAL SPORTS ENTERTAINMENT POLITICS EDUCATION OPINION PLACE AN AD

63°

Doctor convicted of murder for patients' drug overdoses gets 30 years to life in prison



Dr. Hsiu-Ying "Lisa" Tseng was sentenced to 30 years to life in prison for the murders of three of her patients who fatally overdosed, making Tseng the first doctor to be convicted of murder in the United States for overprescribing drugs. (Irfan Khan / Los Angeles Times)



By **Marisa Gerber** - Contact Reporter

Of course we have learned from all
this – *right?*

The screenshot shows the National Center for Health Statistics (NCHS) website. At the top, there is a blue header with the text "National Center for Health Statistics". Below the header, there is a navigation bar with "CDC > NCHS Home" on the left and social media icons for Facebook, Twitter, LinkedIn, and YouTube on the right. The main content area is divided into two columns. The left column contains a sidebar with a home icon and the text "NCHS Pressroom", followed by links for "Weekly COVID-19 Mortality Overview", "2022 Release Schedule", "Upcoming", and "Publications Archives". The right column features a large headline: "Drug Overdose Deaths in the U.S. Top 100,000 Annually". Below the headline, it states "For Immediate Release: November 17, 2021". At the bottom of the right column, there is contact information: "Contact: CDC, National Center for Health Statistics, Office of Communication (301) 458-4800" and "E-mail: paquery@cdc.gov".

Overdose deaths from opioids increased to 75,673 in the 12-month period ending in April 2021, up from 56,064 the year before.

Opioids After Joint Replacement

- Study looked at 574 pts undergoing hip or knee replacement
 - ~30% were taking opioids before their surgery
 - 6 mo after surgery; 53% of knee patients and 35% of hip patients were still taking opioids
 - In those not taking prior to surgery; 8% of knee and 4% of hip patients were still taking 6 mo after surgery
- Why are so many patients still taking these drugs after joint replaced?



Opioids Don't Work for Chronic Pain

- Studies show only modest benefit for short term use (<12 weeks)
 - Cannot extrapolate to chronic use due to tolerance and dependence
 - High percentage self discontinue opioids due to lack of benefit and adverse effects
 - No study shows long-term (1yr or more) benefit of opioids in terms of pain and function
 - Pain beyond 3 mo exceeds normal tissue healing time and a/w higher risk for long-term use
- Substantial risks; opioid use disorder, overdose, and death
- Excludes palliative and end of life care

Urgent Need for Non-Drug Options to Treat Chronic MSK Pain

- Narcotics are not viable option for treating chronic MSK pain
- NSAID's have host of concerns, from ulcers to heart attacks
- Muscle relaxers limited benefit and risk in elderly
- Where can we turn to get pain relief?

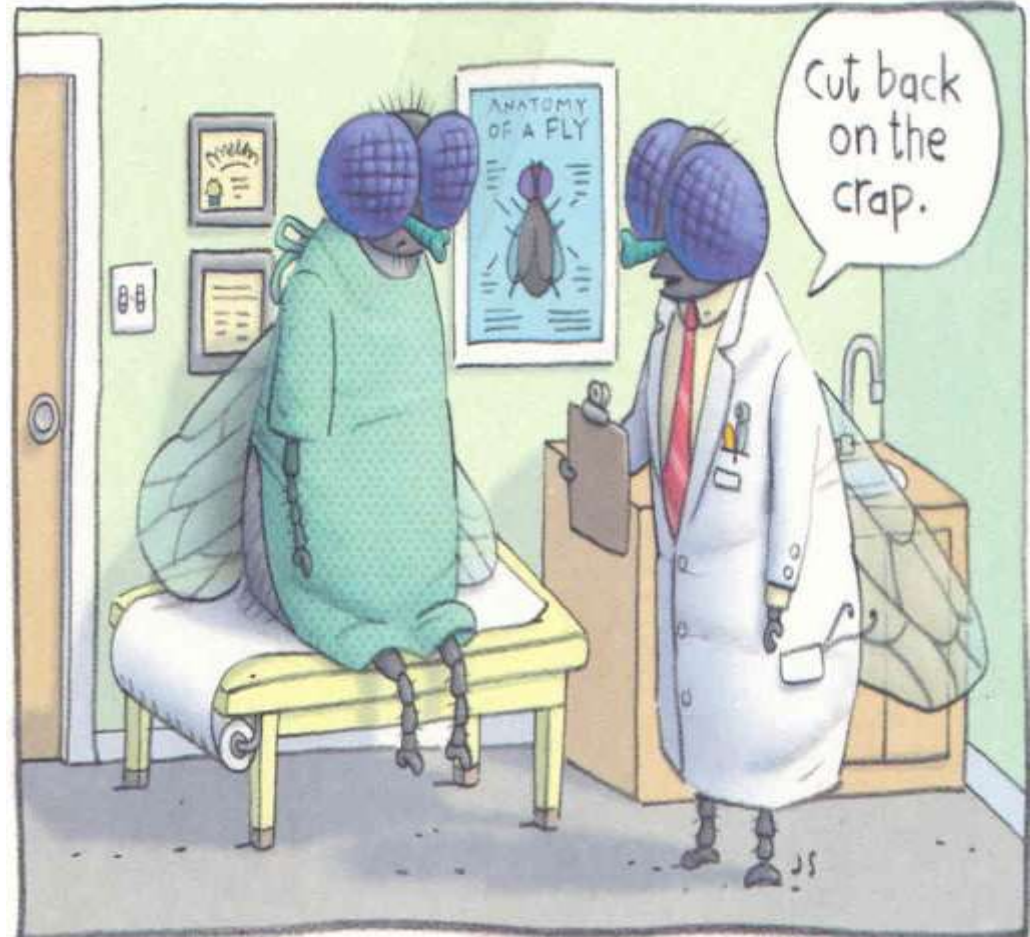




“Primum non nocere”
First, do no harm!
- Hippocrates

Non-Pharmacologic Measures

- Rest and ROM
- Thermal modalities
- Exercise and weight loss
- Education & Joint protection
- External supports
- Rehabilitation and physical therapy
- Other modalities



Rest and Range of Motion Exercises

- Both are often overlooked but critical in healing a painful musculoskeletal injury
- Relative rest; do nothing that causes pain
 - Slowly advance activity as pain allows
- Range of Motion should start right away; Do as much as pain allows; Avoid immobilization!
 - Goal is to restore full and painless ROM



Pendulum Exercises

Thermal Modalities

- Cold – helps relieve aches and pain after injury*
 - Helps control swelling
 - Apply using ice packs, ice massage or local spray
 - 20 min max time
- Heat – helps pain and spasm; use prior to stretching**
 - Avoid first 48 hrs after injury
 - Moist heat often better; Paraffin or heat mitten for hands



*Hubbard, J Athl Train. 2004

**French, Cochrane Database Syst Rev. 2006

Exercise and Weight Loss

- Exercise – can improve general health and be therapeutic*
 - OA is a major reason for inactivity in elderly – health benefits of exercise lost
 - Non weight bearing with bike or water exercise
 - “Functional” exercises involving ADL’s best (getting in & out of chair or climbing stairs)
- Weight loss – especially helps pain from knee or hip OA**
 - Decreases risk for developing OA
 - Next to age, obesity biggest risk for OA -- 10 lb. loss helpful



*Mior, Clin J Pain. 2001

**Gay, Ann Phys Rehab Med. 2016

Education and Joint Protection

- Patient education – is helpful in self-management*
 - Should give encouragement and reassurance
 - Specific advice on activity and measures to unload and protect the injured area (padding, casting etc)
- Joint protection – of arthritic joint from stress decreases pain and preserves cartilage.
 - Walking transmits 3.5x body weight across joint, while squatting transmits 9x (choose swimming over running over tennis)
 - Instability in knee OA common – helped with a therapy program and graduated activity
 - Ambulatory assistive devices – such as canes and walkers can support gait

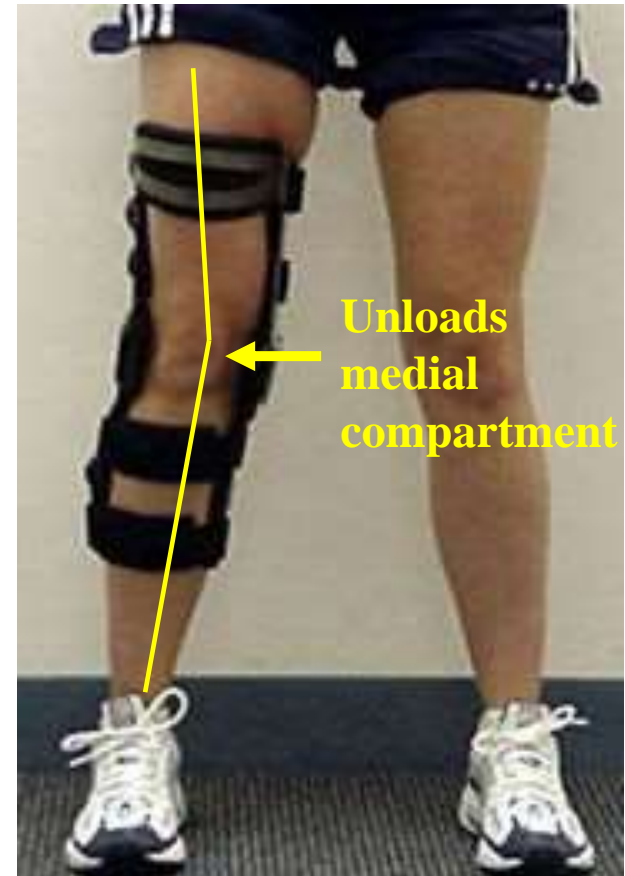
Fitting a Cane

- When placed vertically alongside toes, top of cane should be aligned with *ulnar styloid*
- Force on the cane should be directed downward
- Should be placed in the hand opposite the painful extremity



External Supports

- **Functional knee braces** (unloader brace) – helpful for medial compartment arthritis. *Produce valgus thrust to unload medial compartment**
- **Elastic bandages** – can reduce pain and feeling of giving way; Loose fitting bandages better
- **Patella taping** – can reduce pain and improve function in patellofemoral compartment OA
- **Wedged insoles / orthotics** – may reduce loading on medial or lateral knee compartment
- **Splinting for hand OA** – helps relieve pain for base of thumb OA



How to decide if an Unloader Brace will be effective



External Supports

- **Functional knee braces** (unloader brace) – helpful for medial compartment arthritis. *Produce valgus thrust to unload medial compartment*



Knee OA without bracing
(bone-on-bone contact)



Knee OA with bracing
(space created between bones)

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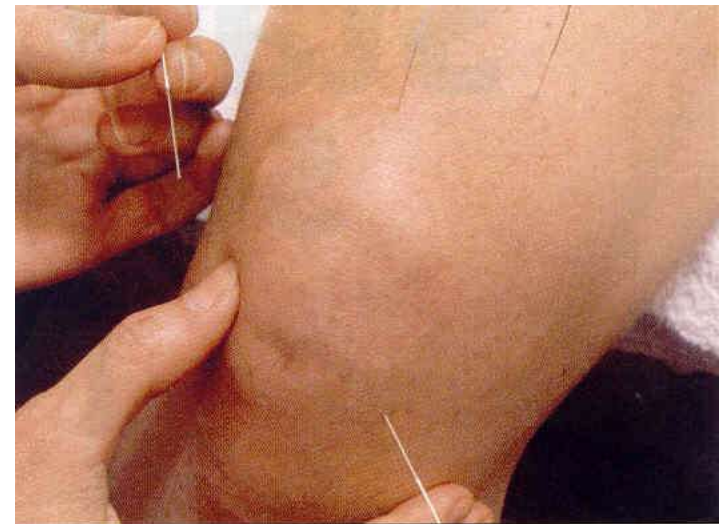
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Other Non-Pharmacologic Measures

- Physical Therapy – done to restore ROM and improve strength in muscles around affected joint and core
- Chiropractic Care – can help correct the body's alignment to restore motion & reduce pain
- Therapeutic massage – relieve pain by relaxing muscles, tendons, and joints
- Acupuncture – may relieve pain and improve function (data not conclusive)



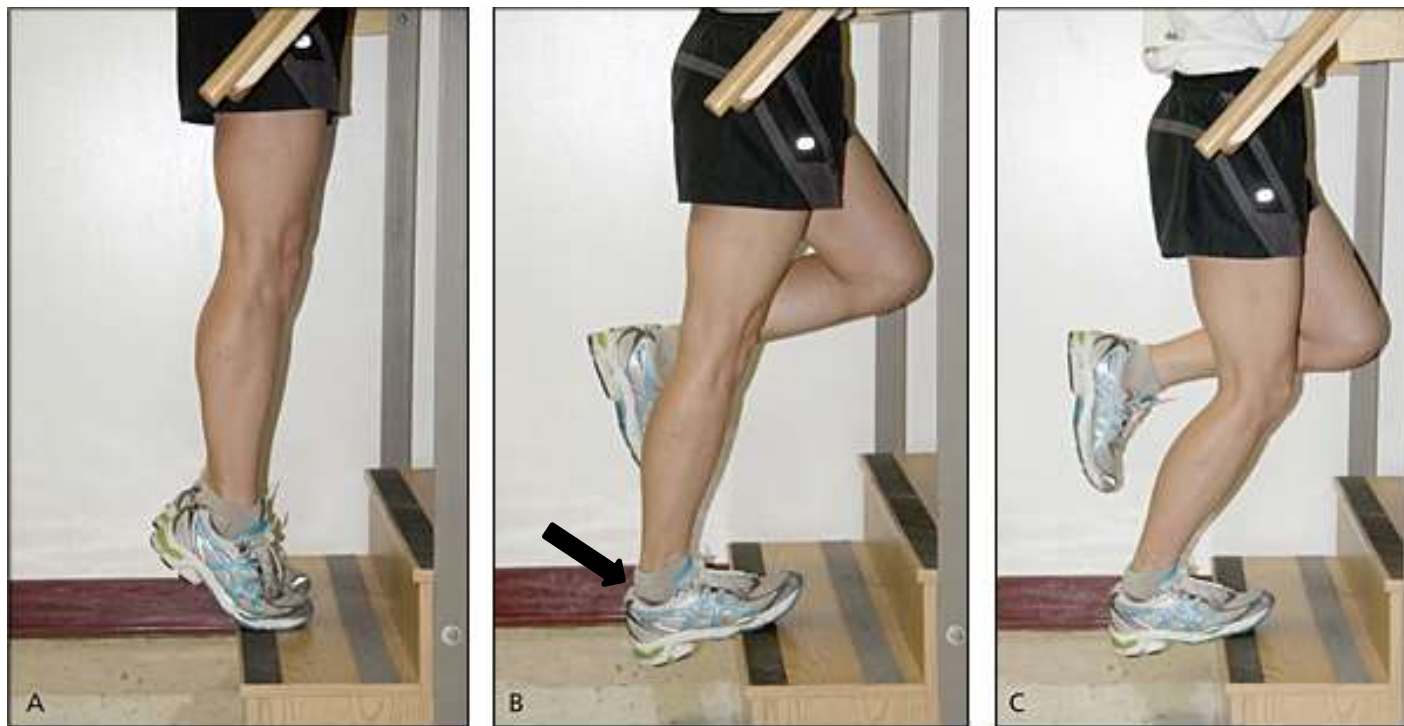
Eccentric Strengthening Exercises

- Should be used as first line treatment for tendonitis (Achilles or Patella tendonitis)
- Typically 3 sets of 10-15 reps twice daily



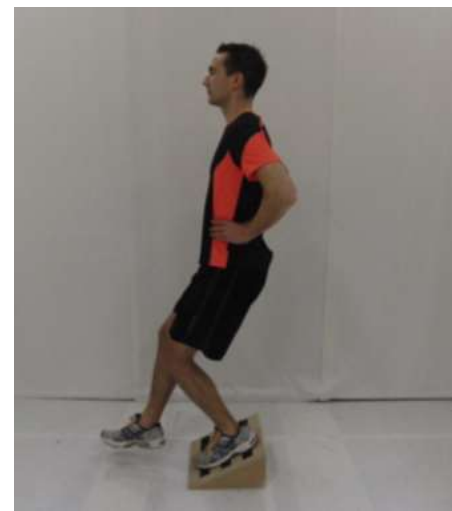
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Isometric Contraction for Pain

- Proven to reduce pain in Patella or Achilles tendonitis
- Can use before or after activity – instead of pain medication
- Use about a 70% of max contraction, held for 45 sec 5x per day
- Typically 3 sets of 10-15 reps twice daily
- *Avoid* coming all the way up on toes (compress tendon)



Electrical Modalities

- Transcutaneous Electrical Nerve Stimulation (TENS therapy)
 - Uses low-voltage electrical currents to disrupt pain signals in the body
 - For quick relief of acute pain
- Pulsed Electromagnetic Field
 - Uses electromagnetic waves pulsing on different frequencies thought to reduce inflammation and increase circulation to relieve pain
 - Use up to 4-6 thirty min sessions per day for acute & chronic pain
 - No known side effects for either



Percussive Massage Therapy Hypervolt & Theragun

- Place the vibrating head over sore muscles
 - Claims to help relieve muscle pain, stiffness and soreness
 - Increase range of motion, circulation and blood flow
- Used by many athletes to help with recovery and injury rehab
- Safe, but no great data to prove effectiveness



Cupping Therapy

- Ancient form of alternative therapy commonly used for neck or back pain
- Therapist applies special suction cups over the area of pain for few minutes
- Thought to improve blood flow to reduce inflammation and pain
- Studies show benefit for neck pain and fibromyalgia

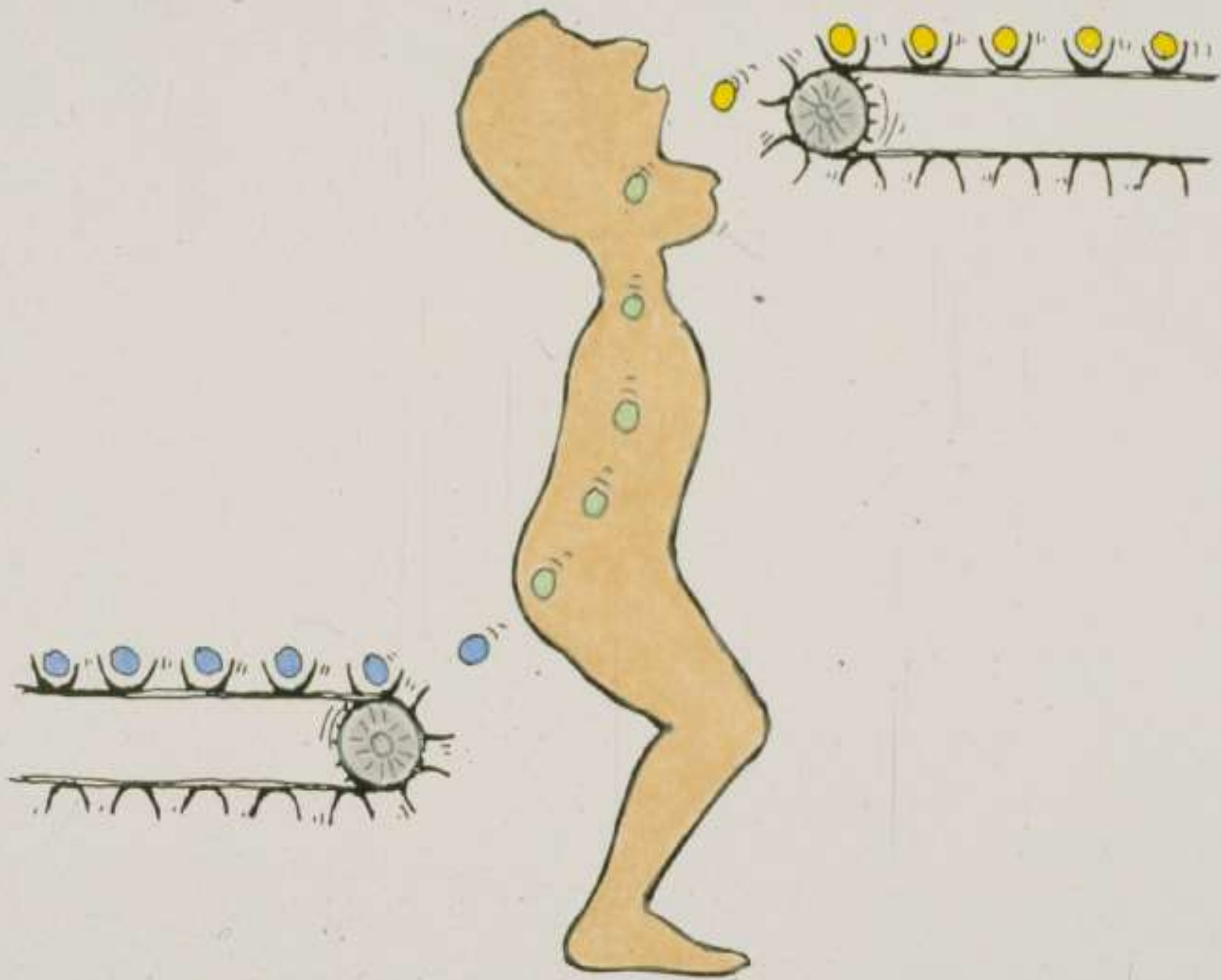


Supplements

- Glucosamine – effective for moderate to severe OA in combination with Chondroitin.
- Chondroitin – with Glucosamine
- SAM-e – seemed to be as effective as Celebrex in one study
- Selenium – no benefits shown
- Folic Acid – may be effective for hand OA (combined with B-12)
- Zinc – more study needed
- Vitamin C – more study needed



Like most veterinary students, Doreen breezes through chapter 9.



Cannabis

- 2 most commonly used Cannabinoids:
 - **Tetrahydrocannabinol (THC)** – commonly smoked but also available in oils, edibles, tinctures, capsules, and more. Makes you high.
 - **Cannabidiol (CBD)** - sold in gels, gummies, oils, supplements, extracts, and more. Can dampen the high.
- A recent meta-analysis revealed that cannabinoids were associated with marked pain reduction.

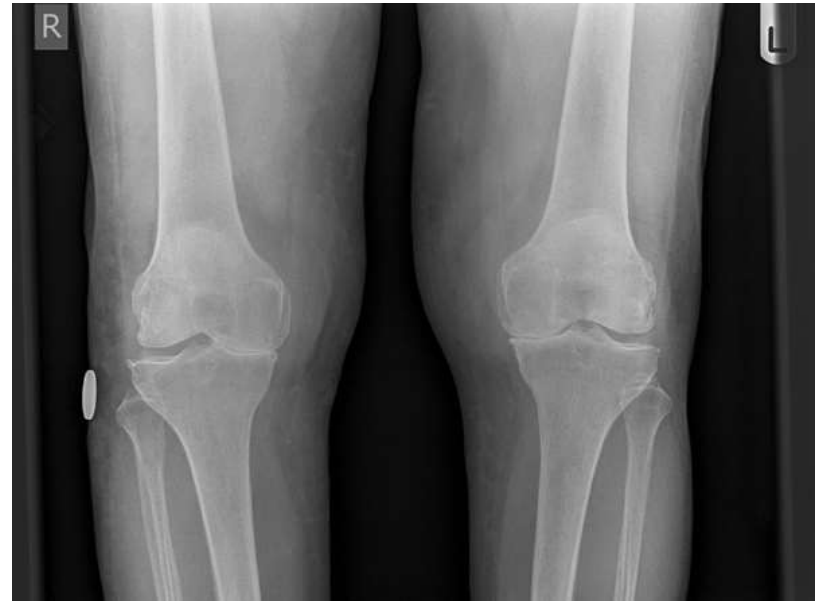
Nitroglycerin Patches

- Good for persistent tendonitis or muscle injury
- Thought to work by vasodilatory effect of Nitric Oxide in local area
 - Nitro-Dur 1 mg/hour patch cut in half applied directly over most tender area. Wear 24 hours per day if possible
 - Need to give 2-3 month trial
- Most common side effect is headache – try using $\frac{1}{4}$ patch or taking off at night



Common Injections for OA

- Cortisone
- Hyaluronic Acid
 - Synvisc
 - Hyalgan
- Prolotherapy
 - Dextrose (sugar water)
 - Platelet Rich Plasma (PRP)
 - Stem Cells



JAMA | Original Investigation

Effect of Intra-articular Triamcinolone vs Saline on Knee Cartilage Volume and Pain in Patients With Knee Osteoarthritis: A Randomized Clinical Trial

Timothy E. McAlindon, DM, MPH; Michael P. LaValley, PhD; William F. Harvey, MD; Lori Lyn Price, MAS; Jeffrey B. Driban, PhD; Ming Zhang, PhD; Robert J. Ward, MD

IMPORTANCE Synovitis is common and is associated with progression of structural characteristics of knee osteoarthritis. Intra-articular corticosteroids could reduce cartilage damage associated with synovitis but might have adverse effects on cartilage and periarthral bone.

OBJECTIVE To determine the effects of intra-articular injection of 40 mg of triamcinolone acetonide every 3 months on progression of cartilage loss and knee pain.

DESIGN, SETTING, AND PARTICIPANTS Two-year, randomized, placebo-controlled, double-blind trial of intra-articular triamcinolone vs saline for symptomatic knee osteoarthritis with ultrasonic features of synovitis in 340 patients. Mixed-effects regression models with a random intercept were used to analyze the longitudinal repeated outcome measures. Patients fulfilling the American College of Rheumatology criteria for symptomatic knee osteoarthritis, Kellgren-Lawrence grades 2 or 3, were enrolled at Tufts Medical Center beginning February 11, 2013; all patients completed the study by January 1, 2015.

INTERVENTIONS Intra-articular triamcinolone (n = 70) or saline (n = 70) every 12 weeks for 2 years.

MAIN OUTCOMES AND MEASURES Annual knee magnetic resonance imaging for quantitative evaluation of cartilage volume (minimal clinically important difference not yet defined), and Western Ontario and McMaster Universities Osteoarthritis index collected every 3 months (Likert pain subscale range, 0 [no pain] to 20 [extreme pain]; minimal clinically important improvement, 3.94).

RESULTS Among 340 randomized patients (mean age, 58 [SD, 8] years, 75 women [54%]), 119 (85%) completed the study. Intra-articular triamcinolone resulted in significantly greater cartilage volume loss than did saline for a mean change in index compartment cartilage thickness of -0.21 mm vs -0.30 mm (between-group difference, -0.11 mm; 95% CI, -0.20 to -0.03 mm); and no significant difference in pain (-1.2 vs -1.9; between-group difference, -0.6; 95% CI, -1.6 to 0.3). The saline group had 3 treatment-related adverse events compared with 5 in the triamcinolone group and had a small increase in hemoglobin A_{1c} levels (between-group difference, -0.2%; 95% CI, -0.5% to -0.007%).

CONCLUSIONS AND RELEVANCE Among patients with symptomatic knee osteoarthritis, 2 years of intra-articular triamcinolone, compared with intra-articular saline, resulted in significantly greater cartilage volume loss and no significant difference in knee pain. These findings do not support this treatment for patients with symptomatic knee osteoarthritis.

TRIAL REGISTRATION ClinicalTrials.gov identifier: NCT01230424

JAMA. 2017;317(9):1167-1175. doi:10.1001/jama.2017.5203

Author Video Interview and JAMA Report Video

Supplemental content

CME Quiz at
jamanetwork.com/learning

Author Affiliations: Division of Rheumatology, Tufts Medical Center, Boston, Massachusetts (McAlindon, Harvey, Driban, Zhang); Department of Biostatistics, Boston University School of Public Health, Boston, Massachusetts (LaValley); Institute for Clinical Research and Health Policy Studies, Tufts Medical Center, Boston, Massachusetts (Price); Tufts Clinical and Translational Science Institute, Tufts University, Boston, Massachusetts (Price); Division of Musculoskeletal Imaging and Intervention, Tufts Medical Center, Boston, Massachusetts (Ward).

Corresponding Author: Timothy E. McAlindon, DM, MPH, Division of Rheumatology, Tufts Medical Center, 800 Washington St, PO Box 400, Boston, MA 02111 (tmc@tuftsmedicalcenter.org).

“2 years of intra-articular triamcinolone, compared with saline, resulted in significantly greater cartilage volume loss and no significant difference in knee pain”

McAlindon, JAMA; 2017

Dry Needling

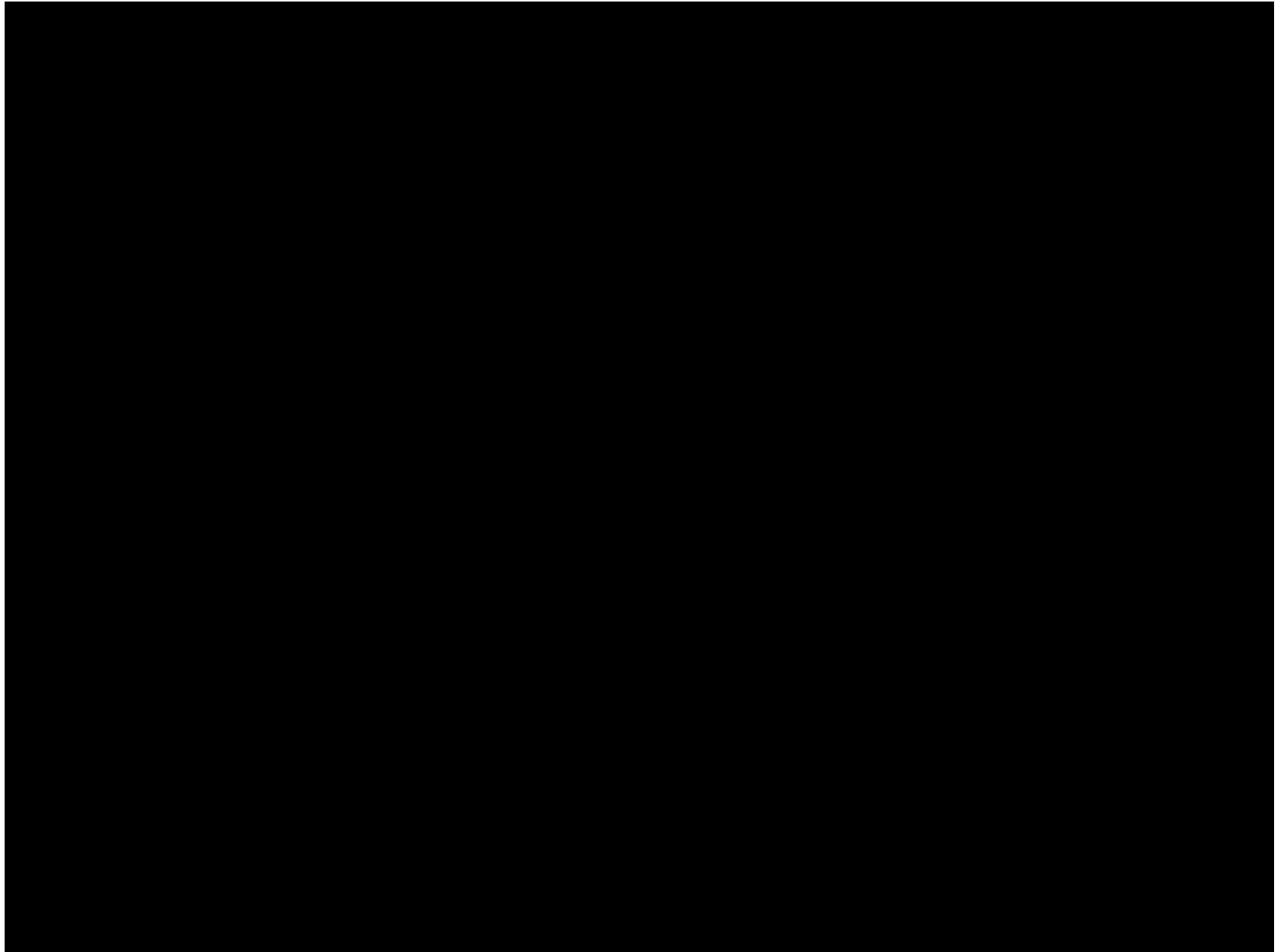
- Quick, easy and low cost
- Use for soft tissue pain – *analogous* to prolotherapy



Dry Needling Hamstring Strain



Dry Needling Hamstring Strain



Dry Needling Hamstring Strain



Dry Needling Hamstring Strain



The Placebo Effect

- The mind tricking you into believing that a fake treatment has real therapeutic results
- What enhances it?
 - Expectations (physician touts it)
 - Cost (the higher the better)
 - Discomfort (surgery, injections, pills)
 - Laying hands on
- Strongest for pain relief – often in the range of 30-60% improvement

My Approach to MSK Pain

- Rest until pain free; exercise to tolerance (cross train)
 - Weight loss (10 lbs. goal)
 - Thermal treatments
 - PT, braces, cane etc.
 - Eccentrics & isometrics for Tendonitis
- Dry needling and Nitro patch
- Acetaminophen up to 3 gm/d; add low dose NSAID prn (Diclofenac or Naprosyn)
- Topical Diclofenac for hand OA.



My Approach to MSK Pain

- Glucosamine 500 mg + Chondroitin 400 TID
- Cortisone injections for pain relief combined with PT
- Elavil HS (help with sleep)
- Consider SSRI if symptoms of depression
- Tramadol or Tylenol #3 only for severe pain and no more than a few days
- No evidence for oral steroids
- Surgical options last resort



Summary for Exercise is Medicine Presentations Robert Sallis, MD

- “Exercise is Medicine: Why You Need to Take it Daily”
- “Exercise and a Healthy Brain: What’s the Connection?”
- “Fitness Vs Weight: What’s More Important to Your Health?”
- “Managing Chronic Musculoskeletal Pain: What are the Best Non-Drug Options?”

Thank You!



RANCHO LA PUERTA

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Questions?