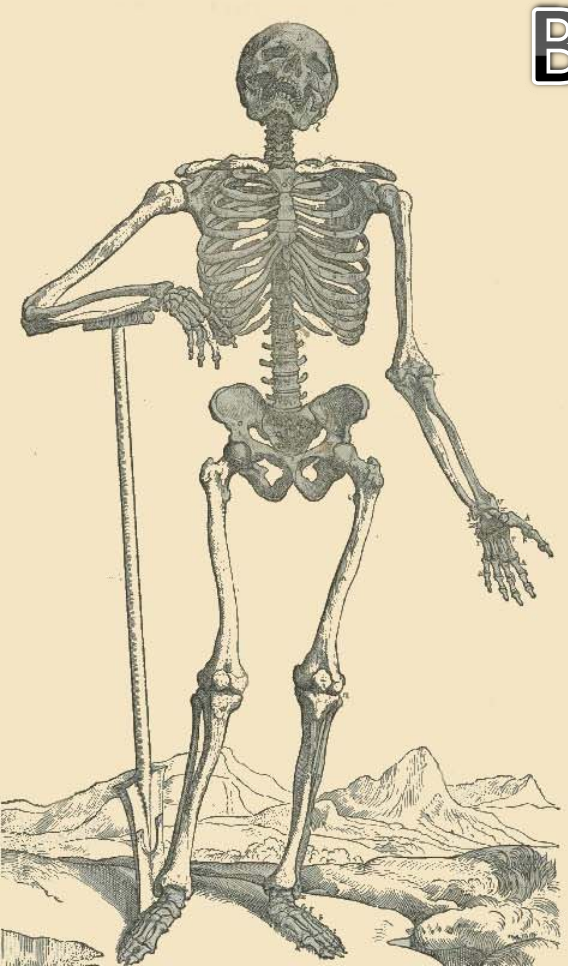
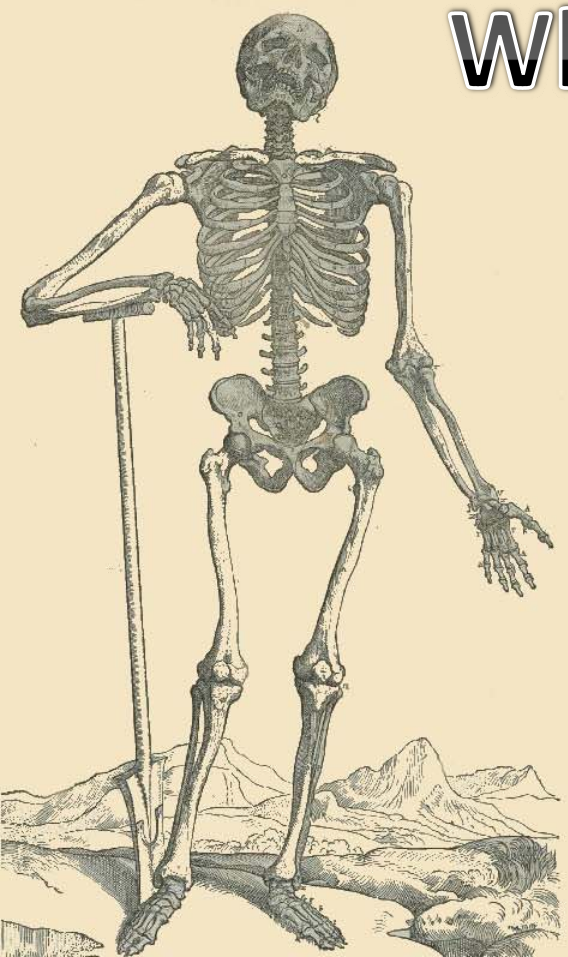
Overview of Evidence Based Spinal Treatment



Jeffrey Radecki, MD
Assistant Professor - Division of Rehabilitation Medicine
Assistant Attending Physiatrist
Weill Cornell Medical College
NewYork-Presbyterian Hospital



Why Should We Treat Back Pain Aggressively???

THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG
VOLUME 86-A · NUMBER 8 · AUGUST 2004

NONOPERATIVE MANAGEMENT OF LOW BACK PAIN AND LUMBAR DISC DEGENERATION

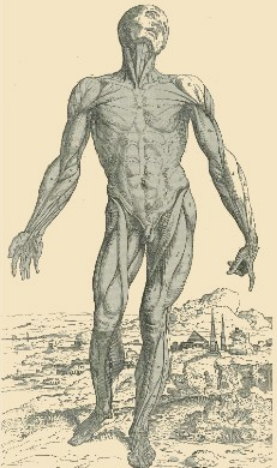
BY DARREL S. BRODKE, MD, AND STEPHEN M. RITTER, MD

- Miss work for >6 months → 50% chance of returning to work
- > 1 year out of work → 25%
- >2 years out of work → <5%
- "The patient should be an active participant in the healing process"

THE JOURNAL OF BONE & JOINT SURGERY · JBJS.ORG
VOLUME 86-A · NUMBER 8 · AUGUST 2004

NONOPERATIVE MANAGEMENT OF LOW BACK PAIN AND LUMBAR DISC DEGENERATION

BY DARREL S. BRODKE, MD, AND STEPHEN M. RITTER, MD



Back Pain Treatment Algorithm

Early interventions

1. Medicines: NSAIDS
   Acetaminophen
   Muscle Relaxants
   Narcotics (short duration)
2. Short Term Bed Rest (2 days maximum)
3. Physical Therapy
4. Chiropractics

Later alternatives

1. Medicines: Anti-Depressants
2. Orthotic devices
3. Physical Therapy – Back School
4. Therapeutic Injections: Epidural
   Nerve Root
   Medial Branch

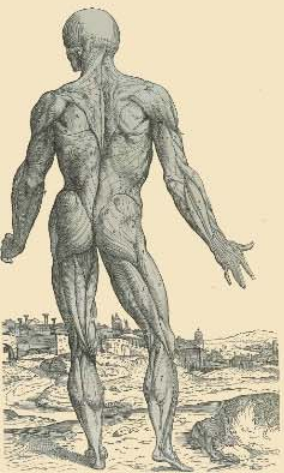
How much rest?

- Pivotal study in 1986
- Group I - 2 days of bedrest
- Group II - 7 days of bedrest
- Group I missed 45% fewer days of work (3.1 vs 5.6)

Deyo RA; NEJM 1986

How much rest?

- No increase in morbidity upon reducing the duration of prescribed rest from 7 to 2 days
- No more systematic rest!
- “As much activity as possible!” are the current recommendations



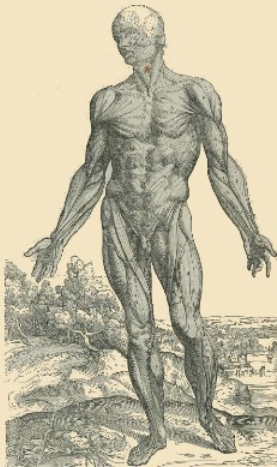
Deyo RA, N Engl J Med 1986;315:1064–70

SPINE Volume XXX, Number XXX, p 000

Management Patterns in Acute Low Back Pain

The Role of Physical Therapy

- A national 20% sample of the Centers for Medicare and Medicaid Services physician outpatient billing claims
- (n 439,195)
- Lower risk of subsequent medical service usage among patients who received PT early after an episode of acute low back pain



Gellhorn AC; Spine 2010

SPINE Volume XXX, Number XXX, p 000

Management Patterns in Acute Low Back Pain

The Role of Physical Therapy

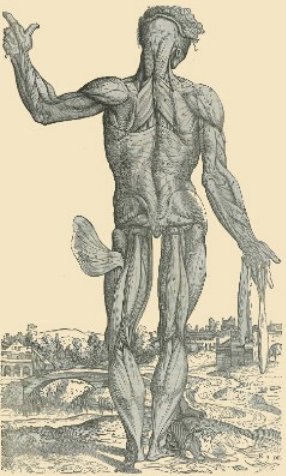
- PT within 30 days → decreased likelihood of receiving subsequent surgery or epidural steroid injections
- PT within 30 days → significantly decreased office visits
- Wide variation exists between medical specialties regarding the use of PT, with patients seen by generalist medical specialties receiving PT least often

Gellhorn AC; Spine 2010

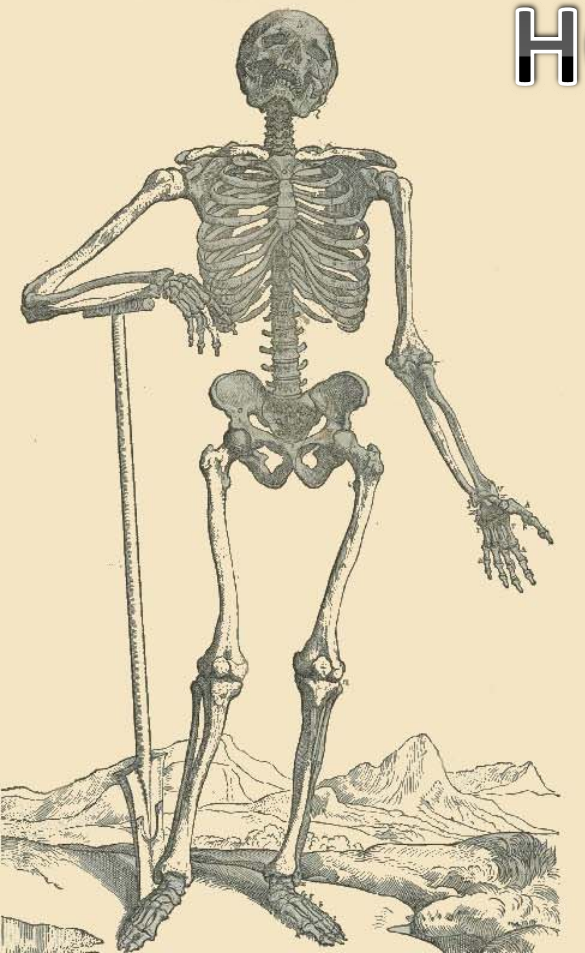
Duration of Symptoms Resulting from Lumbar Disc Herniation: Effect on Treatment Outcomes

Analysis of the Spine Patient Outcomes Research Trial (SPORT)

- Increased symptom duration due to lumbar disc herniation is related to worse outcomes following both operative and nonoperative treatment



Rihn JA; J Bone Joint Surg Am 2011



HOW TO PREVENT BACK PAIN???

Prevention

- **Most episodes of back pain are not preventable**
- **“L**ow back pain should be understood as a remittent, intermittent predicament of life”
- Its cause is indeterminate, but its course is predictable

SPINE Volume 34, Number 9, pp E316–E322

Definitions of Recurrence of an Episode of Low Back Pain

A Systematic Review

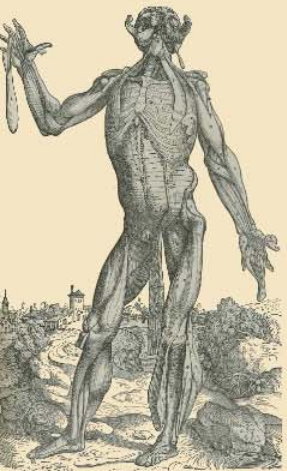
Tasha R. Stanton, MScRS,* Jane Latimer, PhD,* Chris G. Maher, PhD,*
and Mark Hancock, PhD†

- LBP is typically recurrent
- 24% to 87% of individuals who have an episode of LBP will suffer a recurrence within 1 year

The Spine Journal 9(2) 2009

Bigos SJ, Holland J, Holland C, et al.

- Only exercise was found to be an effective intervention for prevention of back problems
- All other interventions studied were found ineffective:
  - including programs for reducing lifting (no lift policies, ergonomic training, and mechanical lifting aids), ergonomic/back education alone, stress management, lumbar supports and shoe inserts

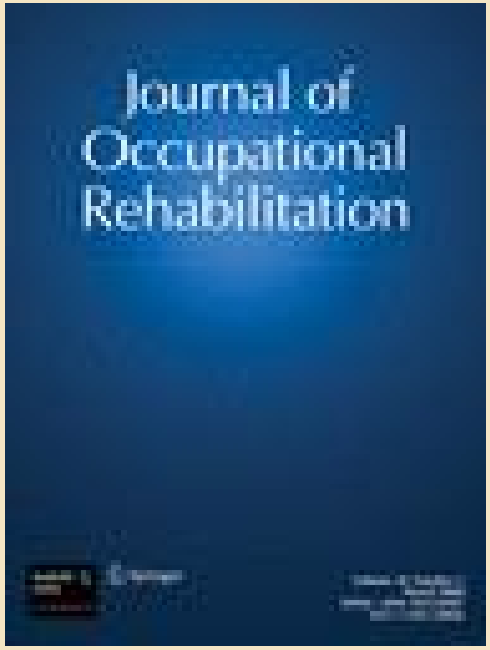


J Occup Rehabil (2009) 19:8–24
DOI 10.1007/s10926-009-9164-5

Exercise for the Primary, Secondary and Tertiary Prevention of Low Back Pain in the Workplace: A Systematic Review

Julie Ann Bell · Angus Burnett

- Only two high quality studies showed significant reductions in LBP intensity with exercise

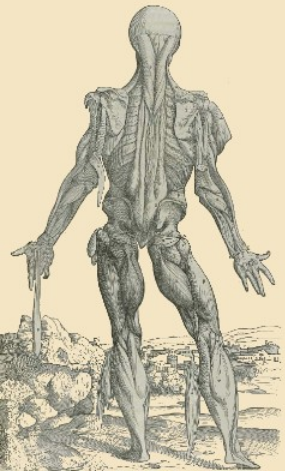


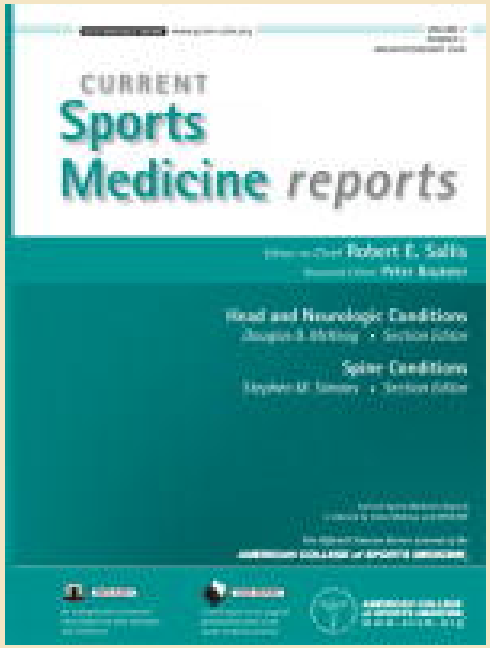
Core Stability Exercise Principles

Venu Akuthota,[1] Andrea Ferreiro,[1] Tamara Moore,[2] and Michael Fredericson[3]

[1]Department of Physical Medicine and Rehabilitation, University of Colorado School of Medicine, Aurora, CO; [2]Sports and Orthopedic Leaders Physical Therapy, Oakland, CA; [3]Division of Physical Medicine and Rehabilitation, Stanford University School of Medicine, Stanford, CA

- Core strengthening has a strong theoretical basis in treatment and prevention of LBP





Physical Therapy

- In 1983, the first randomized controlled trial showing the benefit of therapy in herniated nucleus pulposus
- Although the surgical group did better at 1 year postoperatively, the 2 groups showed no significant difference in outcomes at 4 years after intervention

Weber H; Spine 8:131-140, 1983

Direction of Preference

- The direction of preference is the direction in which centralization occurs
- Patients are treated with progressive exercises in the direction of the preference to restore strength and range of motion

Donelson R, Spine 22:1115-1122, 1997

Centralization

- Centralization occurred in 87% of patients with low back pain and radiating leg pain
- Of those who centralized:
- 98% **acute** symptoms had good or excellent outcomes
- 77% of patients with **subacute** symptoms and 81% of patients with **chronic** symptoms had good or excellent outcomes
- Only 4 patients in the study needed surgery, and all 4 of these patients did not centralize on examination

Donelson R, Spine 22:1115-1122, 1997

Centralization

- Lack of centralization on exercise predicts the need for surgery

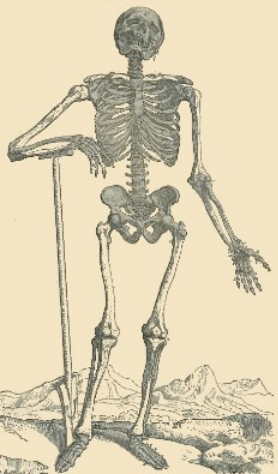
Sufka A,J Orthop Sports Phys Ther 27:205-212, 1998
Werneke M, Spine 26:758-764, 2001
Werneke M, Spine 24:676-683, 1999
Wetzel FT, Spine3:146-154, 2003
Kopp J, Clin Orthop Relat Res 202:211-218, 1986

Spine
SPINE Volume 36, Number 24, pp 1999–2010

Randomized Trial

The McKenzie Method Compared With Manipulation When Used Adjunctive to Information and Advice in Low Back Pain Patients Presenting With Centralization or Peripheralization

- McKenzie method is slightly more effective than manipulation



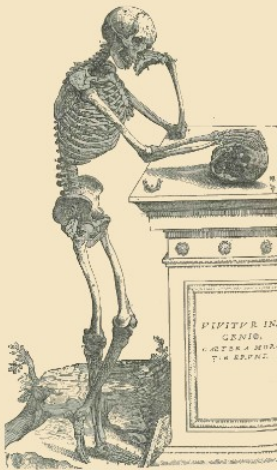
Peterson T; Spine 2011

CLINICAL GUIDELINES | Annals of Internal Medicine

Nonpharmacologic Therapies for Acute and Chronic Low Back Pain: A Review of the Evidence for an American Pain Society/American College of Physicians Clinical Practice Guideline

Roger Chou, MD, and Laurie Hoyt Huffman, MS

- Therapies with good evidence of moderate efficacy for chronic or subacute low back pain are exercise, spinal manipulation, and interdisciplinary rehabilitation



Chou R; Ann Intern Med 2007

Chiropractic Treatment

- 5% of US population seek chiropractic caregivers
- Chiropractic treatment and physical therapy have equivalent success

Coulter ID. Spine 2002; 27: 291-8

Annals of Internal Medicine | ORIGINAL RESEARCH

Yoga for Chronic Low Back Pain

A Randomized Trial

- 12-week yoga program to adults with chronic or recurrent low back pain led to greater improvements in back function than did usual care
- (Usual care was instructional pamphlet)

The New York Times

Magazine

How Yoga Can Wreck Your Body

By WILLIAM J. BROAD

Published: January 5, 2012

U.S. Preventive Services Task Force

Recommendation Statement

Primary Care Interventions to Prevent Low Back Pain in Adults: Recommendation Statement

U.S. PREVENTIVE SERVICES TASK FORCE

- Evidence is insufficient to recommend for or against the routine use of interventions to prevent low back pain in adults in primary care settings

SPINE Volume 34, Number 9, pp 924–933

Insoles for Prevention and Treatment of Back Pain

A Systematic Review Within the Framework of the Cochrane Collaboration Back Review Group

Tali Sahar, MD, MSc,* Matan J. Cohen, MD, MPH,† Vered Uval-Ne'eman, MD,* Leonid Kandel, MD,‡ Daniel Oluwafemi Odebiyi, PhD,§ Ishay Lev, MD,* Mayer Brezis, MD, MPH,† and Amnon Lahad, MD, MPH*

THE COCHRANE COLLABORATION®

- There is strong evidence that insoles are not effective for the prevention of back pain
- There is limited evidence that insoles alleviate back pain or adversely shift the pain to the lower extremities

Lumbar supports for prevention and treatment of low back pain (Review)

van Duijvenbode I, Jellema P, van Poppel M, van Tulder MW

- Moderate evidence that lumbar supports are not more effective than no intervention or training in preventing low-back pain

THE COCHRANE COLLABORATION®

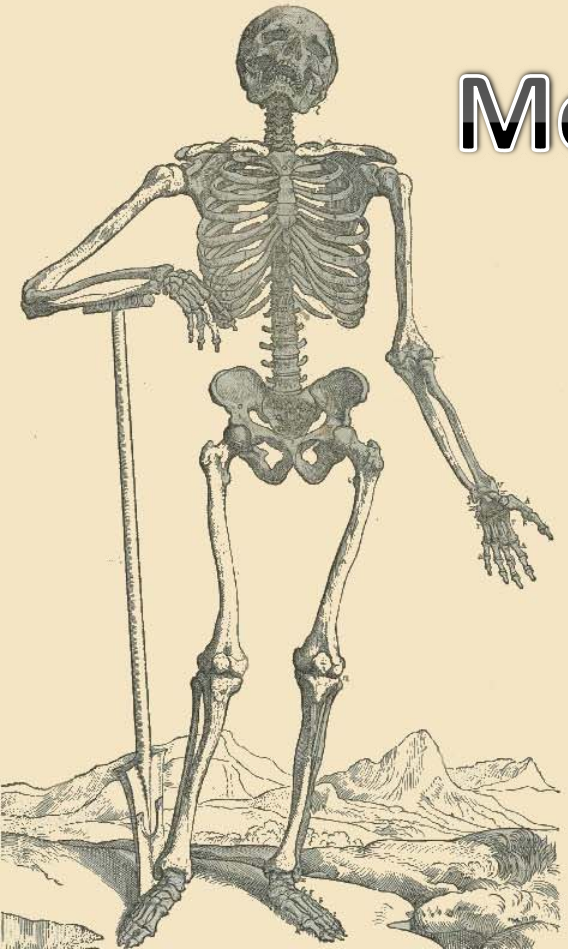
BMJ

RESEARCH

Effect of training and lifting equipment for preventing back pain in lifting and handling: systematic review

Kari-Pekka Martimo, medical specialist,[1] Jos Verbeek, team leader,[2] Jaro Karppinen, medical specialist,[3] Andrea D Furlan, associate scientist,[4] Esa-Pekka Takala, medical specialist,[1] P Paul F M Kuijer, senior researcher,[5] Merja Jauhiainen, information specialist,[6] Eira Viikari-Juntura, research professor[1]

- There is no evidence that advice on lifting and handling prevents back pain or consequent disability



Modifiable Risk Factors???

Spine
SPINE Volume 36, Number 16, pp 1320–1325

HEALTH SERVICES RESEARCH

2011 Young Investigator Award Winner: Increased Fat Mass Is Associated With High Levels of Low Back Pain Intensity and Disability

- Greater fat, but not lean tissue mass, was associated with high levels of low back pain intensity and disability

SPINE Volume 35, Number 7, pp 764–768

The Impact of Body Mass Index on the Prevalence of Low Back Pain

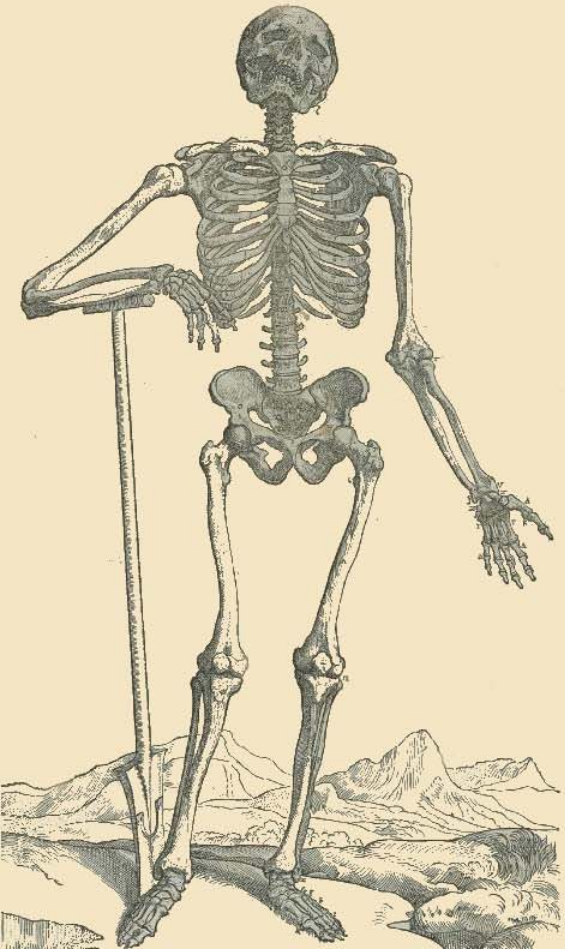
The HUNT Study

- Obesity is associated with a high prevalence of low back pain

Smokers

- Increased LBP and disc herniations in smokers
- 3x increased lumbar disc herniations
- 3.9X increased cervical disc herniations
- Smoking → interferes with bone metabolism → decreased disc nutrition by exchange → disc degeneration

Deyo RA; Spine 1989; 14: 501-6
An HS; J Spinal Disord. 1994; 7:369-73



Medications???

Annals of Internal Medicine | CLINICAL GUIDELINES

Medications for Acute and Chronic Low Back Pain: A Review of the Evidence for an American Pain Society/American College of Physicians Clinical Practice Guideline

Roger Chou, MD, and Laurie Hoyt Huffman, MS

- Medications with good evidence of short-term effectiveness for low back pain are
  - NSAIDs
  - skeletal muscle relaxants (for acute low back pain)
  - Tricyclic antidepressants (for chronic low back pain)

Chou R; Ann Intern Med 2007

SPINE Volume 33, Number 16, pp 1766–1774

Nonsteroidal Anti-Inflammatory Drugs for Low Back Pain

An Updated Cochrane Review

- Evidence from 65 trials included suggests that NSAIDs are effective for short-term symptomatic relief in patients with acute and chronic low back pain

Piperno M. Spine 22:2061-2065, 1997
Van Tulder MW, Cochrane Database Syst Rev 2:CD000396, 2000

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION
American Heart Association®
Learn and Live℠

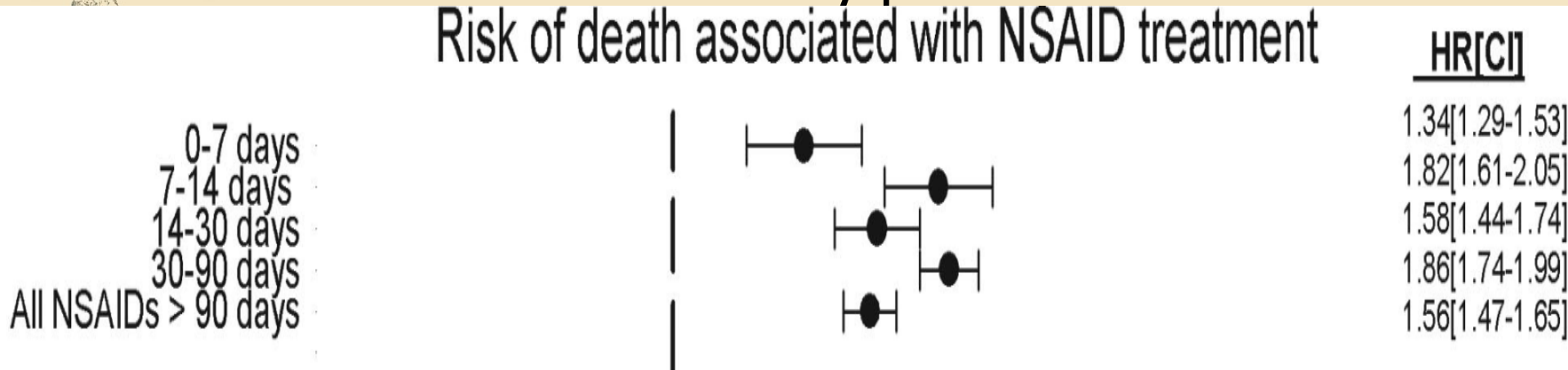
Duration of Treatment With Nonsteroidal Anti-Inflammatory Drugs and Impact on Risk of Death and Recurrent Myocardial Infarction in Patients With Prior Myocardial Infarction : A Nationwide Cohort Study

- Even short-term treatment with most NSAIDs was associated with increased risk of death and recurrent MI in patients with prior MI

Circulation
JOURNAL OF THE AMERICAN HEART ASSOCIATION
American Heart Association®
Learn and Live℠

Duration of Treatment With Nonsteroidal Anti-Inflammatory Drugs and Impact on Risk of Death and Recurrent Myocardial Infarction in Patients With Prior Myocardial Infarction : A Nationwide Cohort Study

- Neither short- nor long-term treatment with NSAIDs is advised in this population, and any NSAID use should be limited from a cardiovascular safety point of view



Pain Physician 2008: Opioids Special Issue: 11:S5-S62 • ISSN 1533-3159

Opioids in the Management of Chronic Non-Cancer Pain: An Update of American Society of the Interventional Pain Physicians' (ASIPP) Guidelines

- Opioids may be effective for short-term pain relief
- Long-term effectiveness of 6 months or longer is variable

Spine
SPINE Volume 36, Number 21S, pp S131–S143

Pharmacologic Management of Chronic Low Back Pain

- For chronic LBP, opioids are more effective than placebo
- Much greater effect on pain than disability
- When compared to NSAIDs, opioids did not confer a significantly greater benefit with regard to effects on pain and disability

Opioids

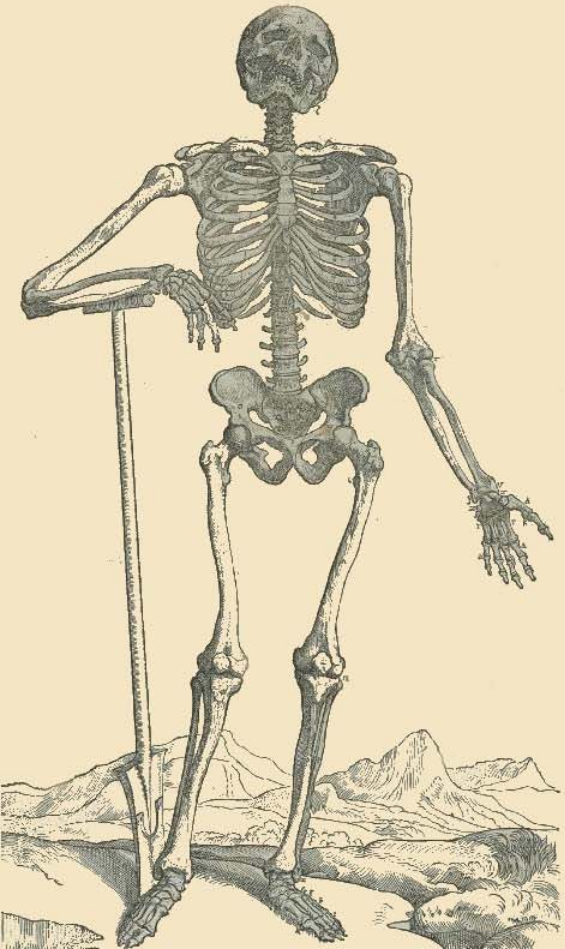
- Short-acting narcotics can cause sleep deprivation despite use to help people with pain preventing sleep
- Combining acetaminophen and oxycodone works better than either alone
- Muscle relaxants work only for a limited period of time

Cooper SA; Clin Pharm Ther. 1979; 25: 219

Muscle Relaxants

- Muscle relaxants reduce pain when compared with placebo
- They should be used in combination with analgesics for no longer than 1 week

Borenstein DG, Clin Ther 25:1056-1073, 2003
Basmajian JV: Spine 14:438-439,1989



Imaging???

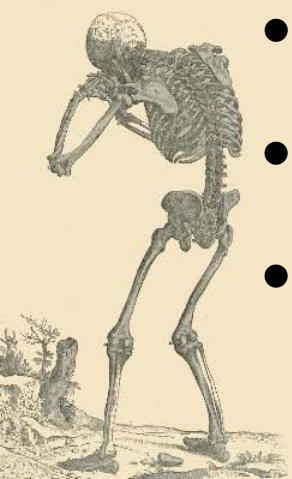
MRI Spinal Imaging

- Lumbar spine MRI on 67 asymptomatic subjects
- Abnormalities in 28%
- Disc herniations were found in 16
- Bulging discs were found in 54% of those less than 60 years old and in 79% of those older than 60

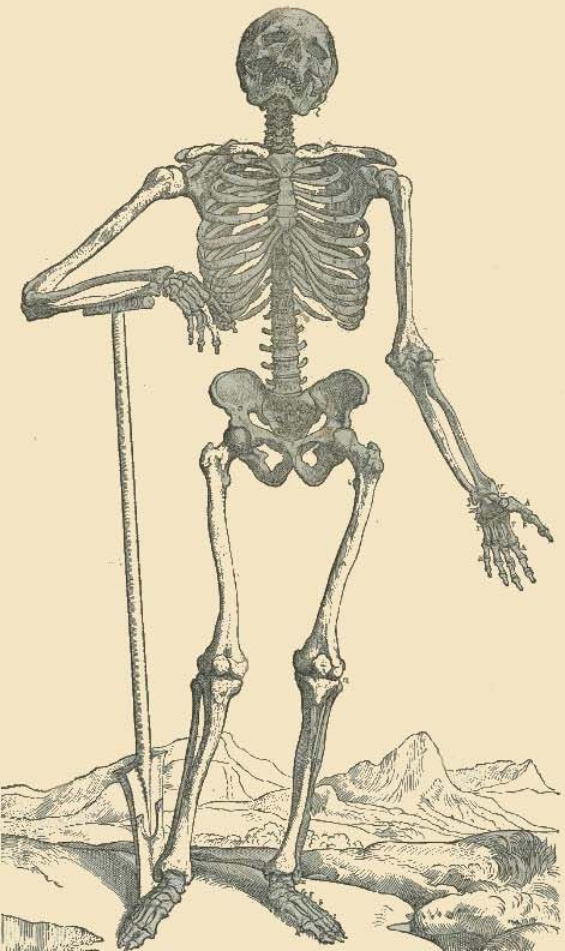
Boden SD, J Bone Joint Surg Am 72(3):403-408, 1990

MRI Spinal Imaging

- Subjects w/o back pain on lumbar spine MRI:
- 36% normal
- 52 % disc bulge
- 27% protrusion
- 1% extrusion
- 14% annular defects
- 8% facet arthropathy



Jensen MC, NEJM 1994 Jul 14;331(2):69-73



Summary of Recommendations

Summary of Recommendations

- Clinicians **should not** routinely obtain imaging with nonspecific low back pain
- Clinicians **should** explain that early, routine imaging usually cannot identify a precise cause, do not improve patient outcomes, and incur additional expenses

Chou R; *Ann Intern Med.* 2007;147:478-491

Summary of Recommendations

- Clinicians **should** perform diagnostic imaging for patients with severe or progressive neurologic deficits are present or when serious underlying conditions are suspected on the basis of history and physical examination

Chou R; *Ann Intern Med.* 2007;147:478-491

Summary of Recommendations

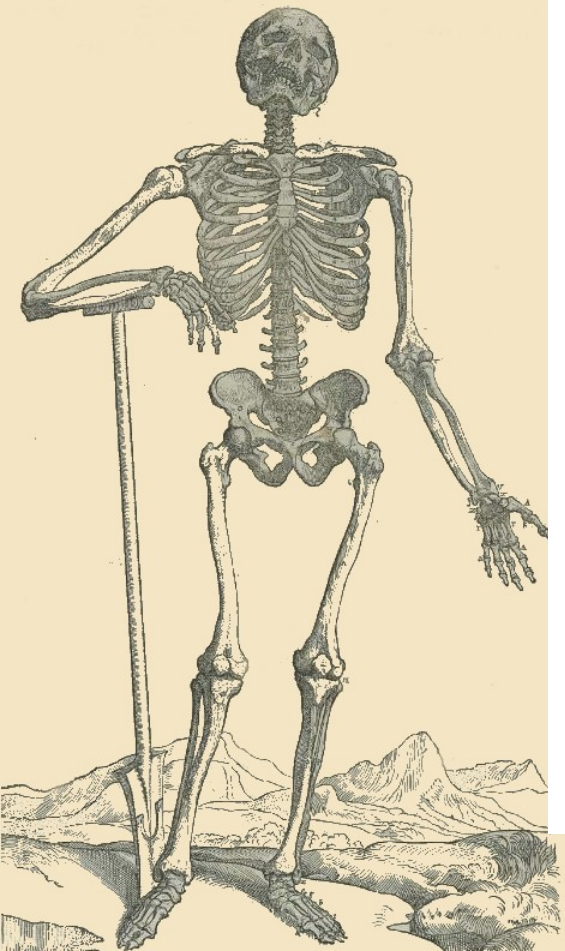
- Clinicians **should** evaluate patients with persistent low back pain and signs or symptoms of radiculopathy or spinal stenosis with magnetic resonance imaging (preferred) or computed tomography only if they are potential candidates for surgery or epidural steroid injection

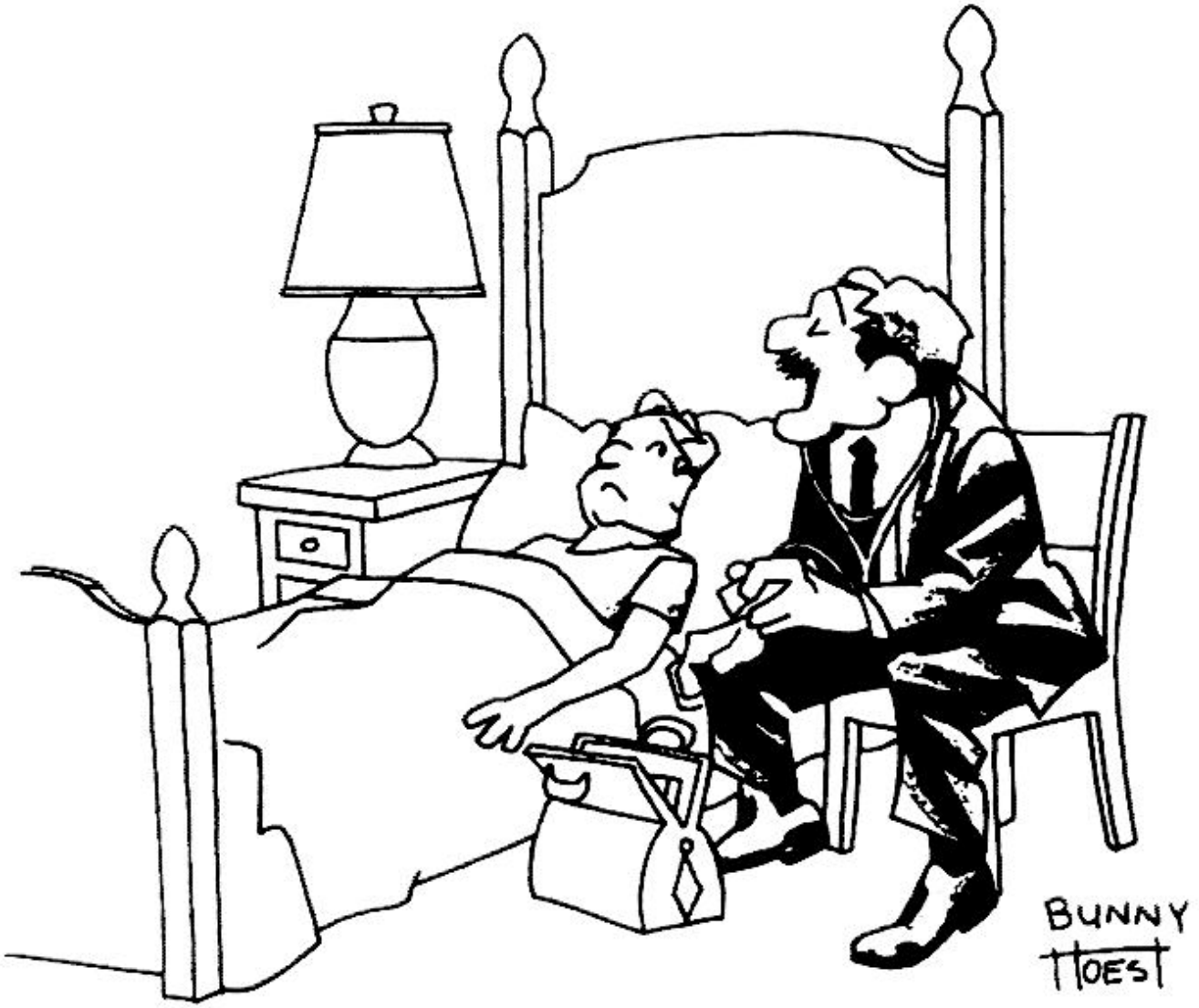
Chou R; *Ann Intern Med.* 2007;147:478-491

Summary of Recommendations

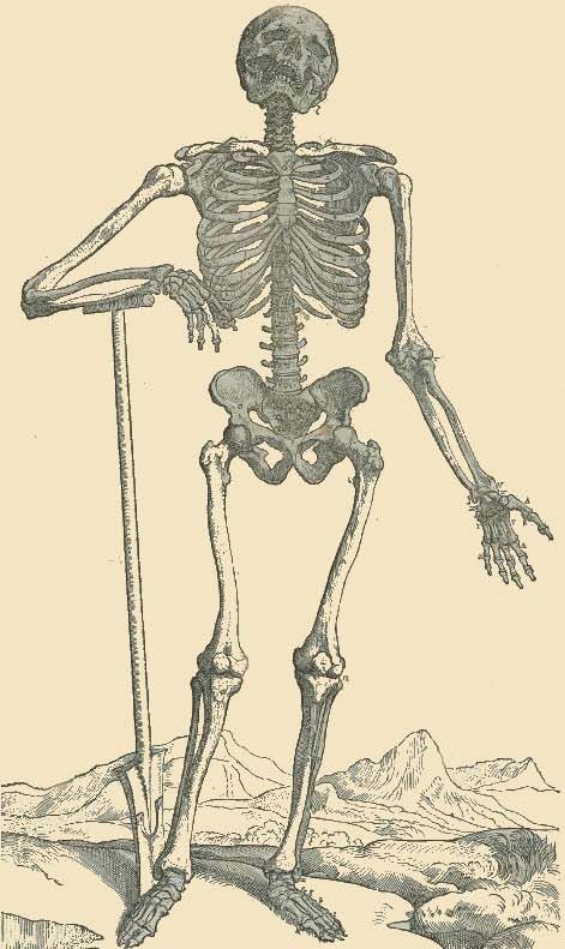
- Clinicians **should** inform all patients of the generally **favorable prognosis** of acute low back pain with or without sciatica, including a high likelihood for substantial improvement in the first month
- General advice on **remaining active**, which is more effective than resting in bed

Pengel LH, BMJ. 2003;327:323
Hagen KB, Cochrane Database Syst Rev. 2004:CD001254
Hilde G, Cochrane Database Syst Rev. 2002:CD003632





"You called me just in time. Another day or two, and you would have been up and around."



Epidural Injections

Epidural Mechanism

- Corticosteroids suppress the immune response by anti-inflammatory and antinociceptive mechanisms as well as mechanical debridement
- They help to arrest the “painspasm” cycle
- Corticosteroids stabilize nerve root membranes by suppressing ectopic discharges, diminishing the migration and accumulation of lymphocytes, and blocking phospholipase A2 activity
- Corticosteroids block C fiber transmission

Franson RC, Spine 17:S129-S132, 1992(S)
Johansson A, Acta Anaesthesiol Scand 35:335-338, 1990

Epidural Mechanism

- Anesthetic agents act by blocking sodium channels, which then inhibit firing of neurons
- They block small-diameter C fibers
- Lidocaine improves blood flow and reduces endoneurial pressure in the dorsal root ganglion

Onda A, Spine 26:2186-2191, 2001

Epidural Steroid Injections

- The level of evidence for TFESI was considered strong for short-term pain relief and moderate for long-term pain relief

Abdi S, Datta S, Trescot AM, et al. Epidural steroids in the management of chronic spinal pain: a systematic review. Pain Physician. 2007;10(1):185-212.

Epidural Steroid Injections

- The 2010 ASA guidelines recommended that: Epidural steroid injections with or without local anesthetics may be used as part of a multimodal treatment regimen to provide pain relief in selected patients with radicular pain or radiculopathy
- **American Academy of Neurology (AAN): In 2007, the Therapeutics and Technology**
- The routine use of ESIs for radicular lumbosacral pain was not recommended

Epidural Steroid Injections

- American Association of Neurological Surgeons and the Congress of Neurological Surgeon: A guideline from the American Association of Neurological Surgeons and the Congress of Neurological Surgeons states that there is no evidence in the clinical literature supporting the long-term benefit of epidural injections

Epidural Steroid Injections

- Fluoroscopically guided lumbosacral transforaminal epidural corticosteroid injections are effective in the short term, and possibly at 6 months, in treating acute/subacute lumbosacral radicular pain

Thomas E, Clin Rheumatol 2003;22:299–304
Karppinen J, Spine 2001;26:1059–67

Epidural Steroid Injections

- Fluoroscopically guided lumbosacral transforaminal epidural corticosteroid injections are more effective than placebo at preventing future surgeries

Riew KD. J Bone JointSurg Am 2000;82-A:1589–93.

Epidural Steroid Injections

- The proposed underlying mechanism of action of epidurally administered steroid and local anesthetic injections is still not well understood
  - The neural blockade alters or interrupts nociceptive input, reflex mechanisms induced by afferent fibers, self-sustaining activity of the neurons, and central neuronal activities
  - Corticosteroids reduce inflammation *via inhibiting pro-inflammatory mediators* and causing a reversible local anesthetic effect

SPINE Volume 34, Number 10, pp 1078–1093

Nonsurgical Interventional Therapies for Low Back Pain

A Review of the Evidence for an American Pain Society Clinical Practice Guideline

- Epidural steroid injection is moderately effective for short-term symptom relief

Epidural Steroid Injections

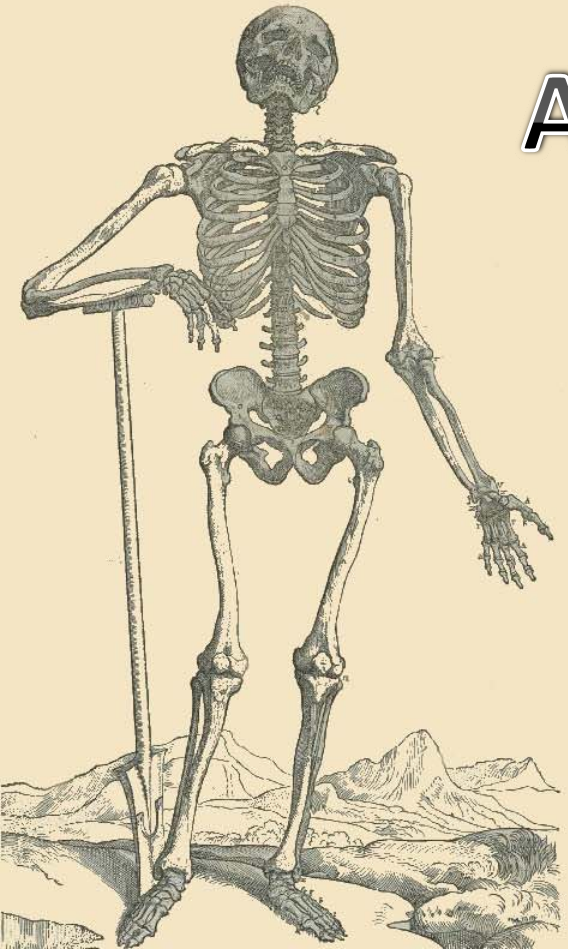
- Fair evidence supporting TFESIs as superior to placebo for treating radicular symptoms
- There is good evidence that TFESIs should be used as a surgery sparing intervention

Roberts ST; PM&R J 2009

Epidural Steroid Injections

- Many articles have been published both in favor and against epidural steroid injections, and the range of success is anywhere from 33% to 77%.

Dreyer SJ, The Low Back Pain Handbook
2003, pp 277-295
Bush K, Spine 17:1205-1212, 1992
Bush K, Spine 16:572-575, 1991



Acupuncture Treatment

SPINE Volume 32, Number 2, pp 236–243

Acupuncture for Neck Disorders

- Moderate evidence that acupuncture relieves pain better than some sham treatments
- Moderate evidence that acupuncture is more effective than inactive treatments for relieving pain post-treatment, and this is maintained at short-term follow-up

Trinh K; Spine 2007
Manheimer E; *Ann Inter Med* 2005;142:651–63.
Furlan AD, *Cochrane Database Syst Rev* 2005:CD001351.

Acupuncture Recommendations

Clinical recommendation	*Evidence rating*
Acupuncture should be considered as a treatment option in the following conditions:	
Low back pain	A
Shoulder pain	B
Neck pain	A
Headache (chronic idiopathic)	A
Headache (migraine)	A
Knee osteoarthritis	B
Fibromyalgia	B
Temporomandibular joint pain	B
Postoperative pain	B

Kelly RB; AFP 2009

Acupuncture Adverse Effects

- Mild adverse effects (e.g., tiredness, local pain, headache, temporary exacerbation of symptoms) occurred at least once in approximately 10 percent of patients treated over three months
- More significant adverse effects (e.g., severe nausea, fainting, severe or prolonged exacerbation of symptoms, strong emotional reactions) occurred at a rate of 1.3 per 1,000 treatments

MacPherson H, *Acupunct Med.* 2001;19(2): 93-102.
Macpherson H, *Acupunct Med.*2004;22(3):122-133.

SPINE Volume 33, Number 23, pp E887–E900

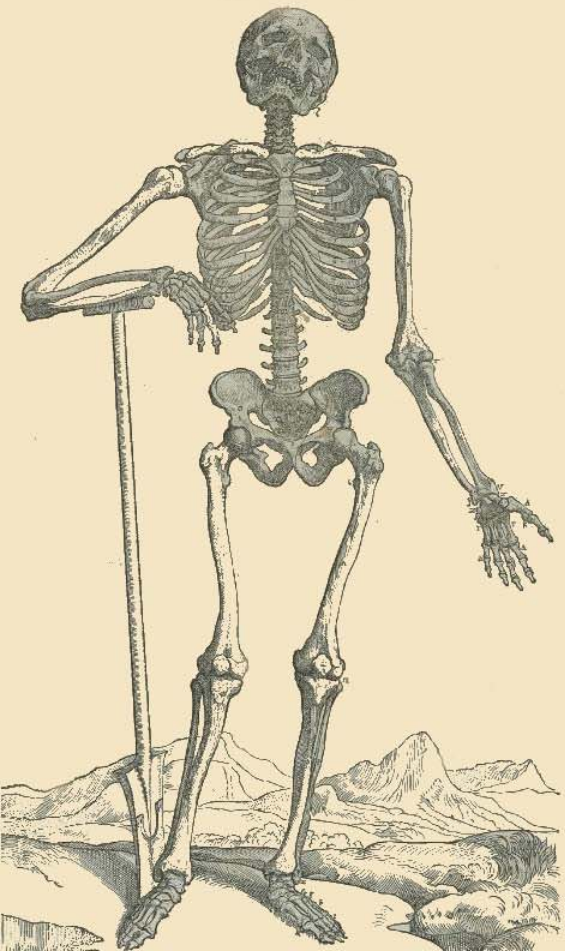
Effectiveness of Acupuncture for Low Back Pain

A Systematic Review

Jing Yuan, PhD,* Nithima Purepong, MSc,* Daniel Paul Kerr, PhD,*
Jongbae Park, KMD, PhD,† Ian Bradbury, PhD,‡ and Suzanne McDonough, PhD*

- Moderate evidence that acupuncture is more effective than no treatment, and strong evidence of no significant difference between acupuncture and sham acupuncture, for short-term pain relief

Yuan J; Spine 2008



Lumbar Stenosis Treatment

Evidence-Based Medicine

Pain Physician 2009; 12:E123-E198

Comprehensive Review of Therapeutic Interventions in Managing Chronic Spinal Pain

Laxmaiah Manchikanti, MD[1], Mark V. Boswell, MD, PhD[2], Sukdeb Datta, MD[3], Bert Fellows, MA[4], Salahadin Abdi, MD, PhD[5], Vijay Singh, MD[6], Ramsin M. Benyamin, MD[7], Frank J.E. Falco, MD[8], Standiford Helm, MD[9], Salim Hayek, MD, PhD[10], and Howard S. Smith, MD, PhD[11]

Results of effectiveness in evaluation in managing spinal stenosis.

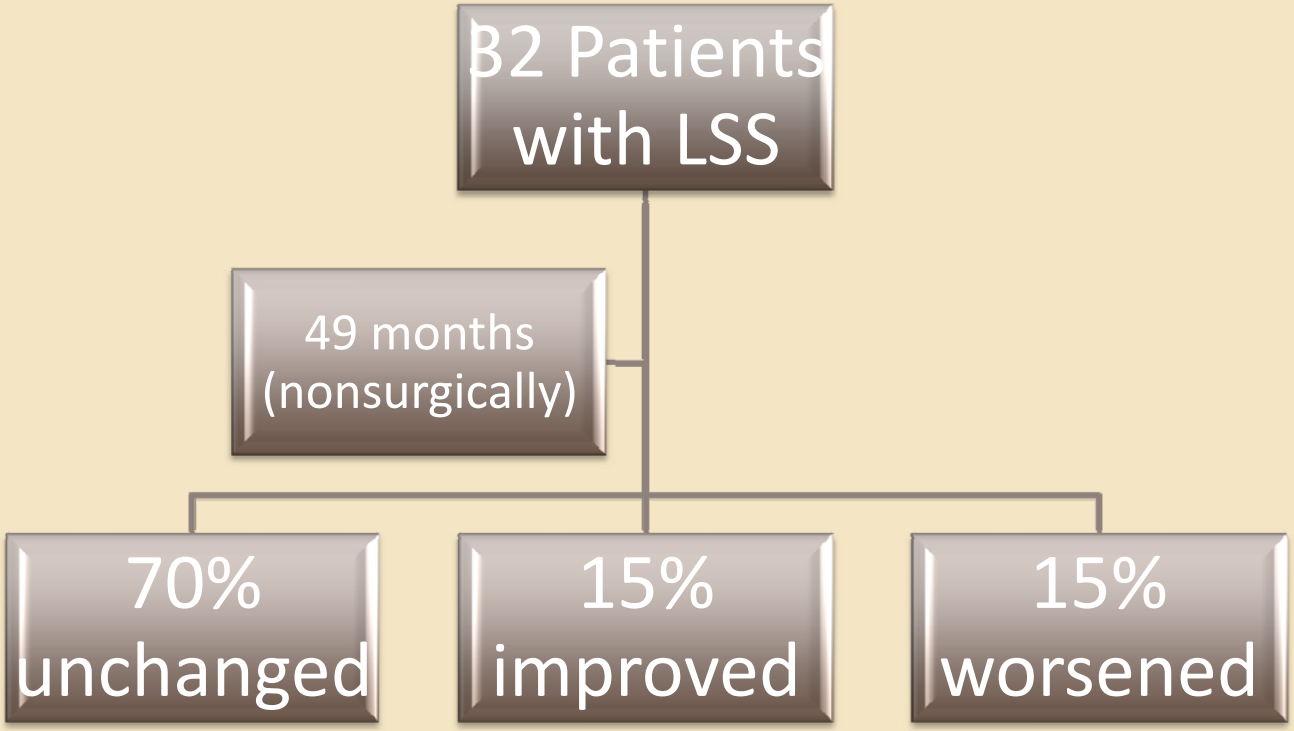
Study	Study Characteristics	Methodological Quality Scoring	Participants	Pain Relief			Results	
				3 mos.	6 mos.	12 mos.	Short-term relief ≤ 6 mos.	Long-term relief > 6 mos.
Manchikanti et al 2008 (254)*	RA, DB	70	40	50% to 65%	60% to 65%	55% to 65%	P	P
Ciocon et al 1994 (255)	O	57	30	SI	SI	NA	P	NA
Botwin et al 2007 (258)*	O	61	34	65%	62%	54%	P	P

RA = randomized; DB = double blind; O = observational; NA = not available;
SI = significant improvement; vs = versus; P = positive; N = negative

*Indicates use of fluoroscopy

Lumbar Spinal Stenosis

- **PROGNOSIS** — The natural history of lumbar spinal stenosis (LSS) due to degenerative spondylosis is relatively benign.



- However, LSS causes discomfort, often limiting activities of daily living, and can lead to progressive disability.

Clin Orthop Relat Res. 1992 Jun; (279):82-6

SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD

- Randomized single blind control trial
- All patients received Diclofenac 75 mg BID
- All patients received home based exercise program of stretching exercises for the hip flexors, hamstrings and lumbar paraspinal muscles, and strengthening exercises for abdominal and gluteal muscles to be performed twice daily for a period of 6 months

SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD

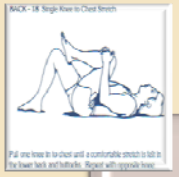
29 patients

- Group 1 (10)
- Group 2 (10)
- Group 3 (9)

SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD



Physical Therapy

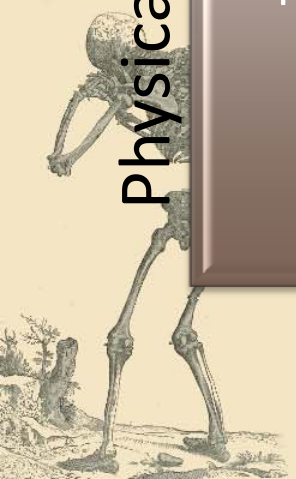
- Inpatient 5 days/wk for 2 weeks
- U/s, hot packs, TENS

ESI

- Intralaminar injection through most stenotic level
- Kenalog, bupivacaine, saline

Control

- Baseline Diclofenac for 2 wks
- Baseline home exercises for 6 months

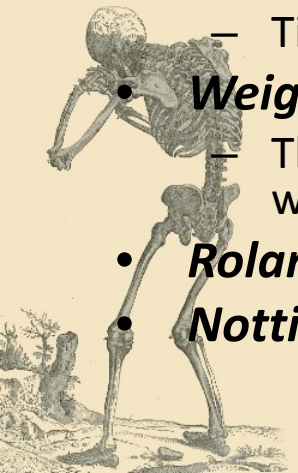


SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD

- ***Pain Severity by Visual Analog Scale (VAS)***
  - 0-100 scale
- ***Finger Floor Distance (FFD) (cm)***
  - The distance between finger tip and floor was measured
- ***Treadmill Walk Test***
  - walk on a flat treadmill platform with a constant speed of 2 mph (3.2 km/h). Time to first symptoms (TFS) and total ambulation time (TAT), were recorded
- ***Sit-to-Stand Test (Seconds)***
  - Time to stand up from a chair without using his/her arms
- ***Weight-Carrying (WC) Test (Seconds)***
  - The patient was asked to walk 20 m as fast as possible carrying 10% of body weight
- ***Roland Morris Disability Index (RMDI)***
- ***Nottingham Health Profile***



SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD

- Both epidural steroid and physical therapy groups demonstrated significant improvement in pain and functional parameters
- No significant difference was noted between the 2 treatment groups
- Pain and functional assessment scores (RMDI, NHP physical activity subscore) were significantly more improved in group 2 compared with controls at the second week

SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD

- Epidural steroid injections and physical therapy both seem to be effective in LSS patients up to 6 months of follow-up

SPINE Volume 34, Number 10, pp 985–989

Effectiveness of Physical Therapy and Epidural Steroid Injections in Lumbar Spinal Stenosis

Zarife Koc, MD, Suheda Ozcakir, MD, Koncuy Sivrioglu, MD, Alp Gurbet, MD, and Selcuk Kucukoglu, MD

- Epidural steroid injections are a reasonable treatment option in LSS patients
- In fact, 23% of all epidural steroid injections are performed for the treatment of LSS

ELSEVIER

The Spine Journal 8 (2008) 305–310

THE SPINE JOURNAL

Review Article

Degenerative lumbar spinal stenosis: an evidence-based clinical guideline for the diagnosis and treatment of degenerative lumbar spinal stenosis

- Transforaminal epidural steroid injection or caudal injections can produce long-term relief of pain in lumbar spinal stenosis
- Approximately 20% to 40% of patients with mild to moderate lumbar spinal stenosis initially will ultimately require surgical intervention
- 50% to 70% will have improvement in their pain

ELSEVIER

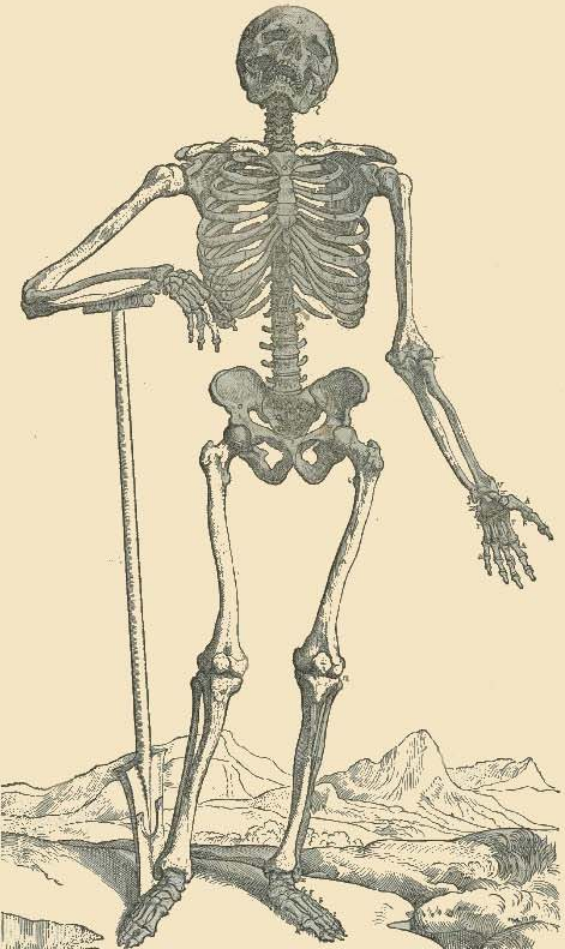
The Spine Journal 8 (2008) 305–310

THE SPINE JOURNAL

Review Article

Degenerative lumbar spinal stenosis: an evidence-based clinical guideline for the diagnosis and treatment of degenerative lumbar spinal stenosis

- In patients with mild to moderate symptoms of lumbar spinal stenosis, medical/interventional treatment is effective up to 70% of the time.
- In patients with severe symptoms of lumbar spinal stenosis, decompressive surgery alone is effective about 80% of the time



Facet Joint Treatment

Pain Physician 2007; 10:213-228 • ISSN 1533-3159

Review

Systematic Review Of Diagnostic Utility Of Facet (Zygapophysial) Joint Injections In Chronic Spinal Pain: An Update

- Diagnostic facet joint blocks are safe, valid and reliable
- There is strong evidence that controlled diagnostic blocks distinguish painful from painless facet joints in the diagnostic work up of chronic spinal pain

Facet joint pain radiofrequency (RF) ablation

- Validated
  - 2 randomized controlled trials
  - 1 uncontrolled trial

Lord S NEJM 1996, Dreyfuss P; Spine 2000

Pain Physician 2009; 12:437-460 • ISSN 1533-3159

Systematic Review

Systematic Assessment of Diagnostic Accuracy and Therapeutic Utility of Lumbar Facet Joint Interventions

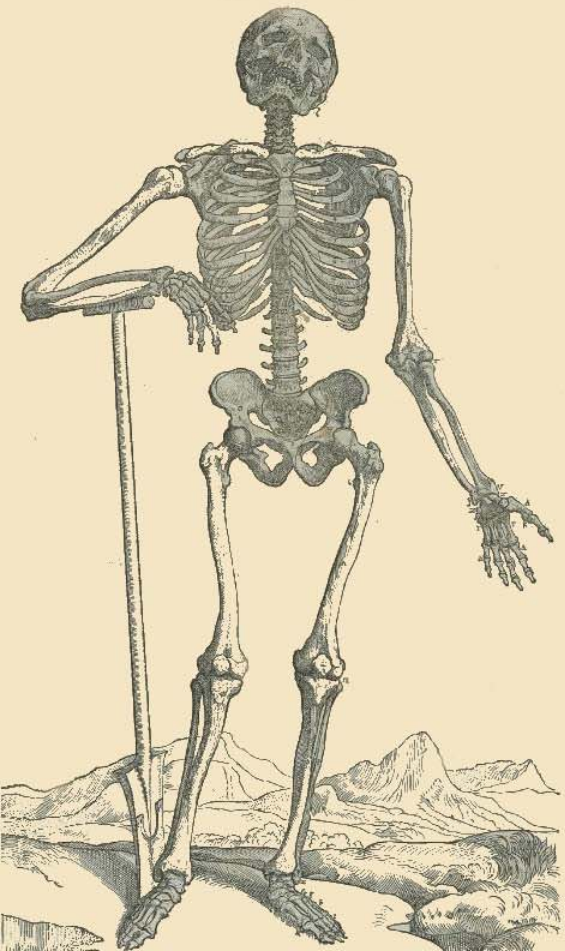
- Evidence for diagnosis of lumbar facet joint pain with controlled local anesthetic blocks is Level I or II-1
- Evidence for therapeutic lumbar facet joint interventions is Level II- 1 or II-2 for lumbar facet joint nerve blocks, Level II-2 or II-3 evidence for radiofrequency neurotomy

SPINE Volume 33, Number 12, pp 1291–1297

Percutaneous Lumbar Zygapophysial (Facet) Joint Neurotomy Using Radiofrequency Current, in the Management of Chronic Low Back Pain

A Randomized Double-Blind Trial

- Radiofrequency facet denervation is not a placebo and could be used in the treatment of carefully selected patients with chronic low back pain



Cervical Pain/Radiculopathy

SPINE Volume 33, Number 4S, pp S123–S152

Treatment of Neck Pain: Noninvasive Interventions

Results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders

- Manual Therapy and exercise more effective with neck pain
- Acupuncture also with some proven benefit

Hurwitz, EL

Annals of Internal Medicine | ORIGINAL RESEARCH

Spinal Manipulation, Medication, or Home Exercise With Advice for Acute and Subacute Neck Pain

A Randomized Trial

- For participants with acute and subacute neck pain, spinal manipulation therapy was more effective than medication in both the short and long term
- However, a few instructional sessions of home exercise with advice resulted in similar outcomes

Bronfort G; Ann Int Med 2012

ELSEVIER

The Spine Journal 11 (2011) 64–72

THE SPINE JOURNAL

Review Article

An evidence-based clinical guideline for the diagnosis and treatment of cervical radiculopathy from degenerative disorders

- Most patients with cervical radiculopathy will be self-limited and will resolve spontaneously over a variable length of time without specific treatment

January 1, 2010 • Volume 81, Number 1 www.aafp.org/afp American Family Physician

Cervical Radiculopathy: Nonoperative Management of Neck Pain and Radicular Symptoms

JASON DAVID EUBANKS, MD, *Case Western Reserve University School of Medicine, Cleveland, Ohio*

- Anti-Depressants (TCAs, Effexor) and Tramadol alleviate chronic neck pain

Saarto T, *Cochrane Database Sys Rev*. 2007;(4):CD005454
Hollingshead J, *Cochrane Database Sys Rev*. 2006;(3):CD003726.

Cervical Radicular Pain

- Epidural steroid injections for cervical radicular pain leads to short-term symptomatic improvement in radicular symptoms

Carragee EJ, *Spine.* 2008;33(4 suppl):S153-169.

Cervical Radicular Pain

- Complications for Cervical ESI for cervical radicular pain 1.66% with <1% of that being major (spinal cord injury, etc)

Ma DJ, *J Bone Joint Surg Am.*2005;87(5):1025-1030.

Cervical Radicular Pain

- Either ACDF or posterior foraminotomy are suggested for the treatment of single-level degenerative cervical radiculopathy secondary to foraminal soft disc herniation

Herkowitz HN, Spine 1990;15:1026–30.
Korinth MC, Spine 2006;31:1207–14

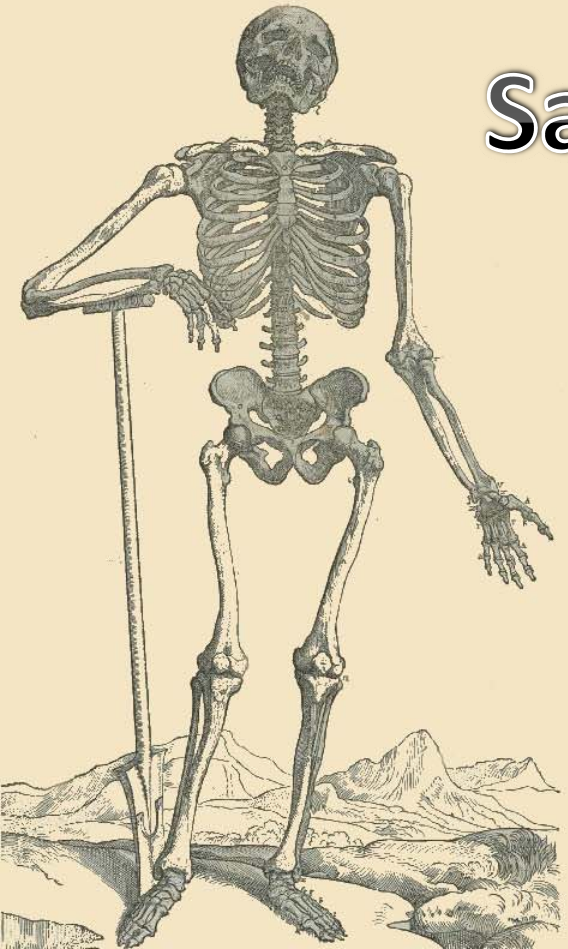
SPINE Volume 33, Number 4S, pp S153–S169

Treatment of Neck Pain

Injections and Surgical Interventions: Results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders

- Surgical treatment and limited injection procedures for cervical radicular symptoms may be reasonably considered in patients with severe impairments
- Surgical treatment for neck pain alone, without radicular symptoms, seems to lack scientific support

Carragee EJ; Spine 2008



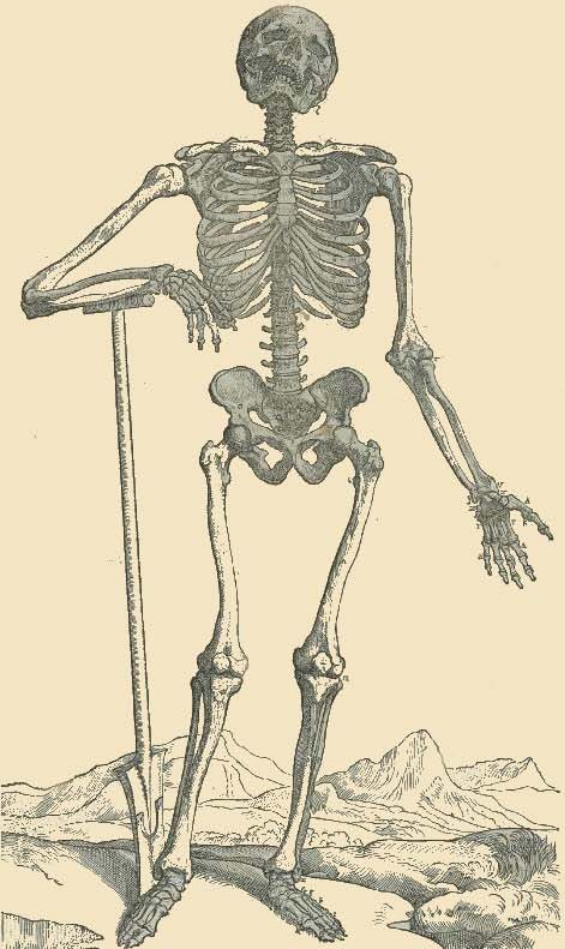
Sacroiliac Joint Pathology

Pain Physician 2009; 12:399-418 • ISSN 1533-3159

Systematic Review

Evaluation of Sacroiliac Joint Interventions: A Systematic Appraisal of the Literature

- Evidence for the validity of diagnostic sacroiliac joint injections is moderate
- Evidence for the accuracy of provocative maneuvers in the diagnosing of sacroiliac joint pain is limited



Questions???