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Low Back Pain: Where to begin?

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Affiliations



Disclosures

- Research study funded by Nevro
- Co-Investigator for study funded by BioSplice

Learning Objectives

- Describe the epidemiology and natural history of low back pain
- Describe trends in evaluation and management of low back pain, outcomes, practice variations, and implications for practice
- Describe an evidence-based approach to evaluation and management of low back pain

Low Back Pain Burden

- LBP is the 5th most common reason for U.S. office visits, and the 2nd most common symptomatic reason
 - >16 million LBP office visits/year
 - 5% of PCP visits are for LBP
 - Most common reason to see a spine surgeon
- Up to 84 percent of adults have LBP at some time in their lives, and over one-quarter in the previous 3 months
 - Only 2-5% seek health care or claim disability

Low Back Pain Burden

- Peaks at 55 to 64 years of age; affects all ages
- The most common cause of activity limitations in persons <45 years of age
 - More disability than cancer + heart disease + stroke + AIDS
- In 2021, approximately \$100 billion dollars in spending for low back pain
 - Increase of \$64 billion from 1996

RISK FACTORS FOR LBP

- Congenital spine abnormalities
- Smoking
- Occupation
- Prior episode of LBP
- Physical unfitness
- Increasing age



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STEP 1 IN THE CARE OF THE LBP PATIENT

Listen to the patient's story, obtain adequate medical history and social history.

Look for psychological and environmental factors that might impair recovery.



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STEP 2 IN THE CARE OF THE LBP PATIENT

Perform a directed physical examination

Myotomes of the Lower Extremities

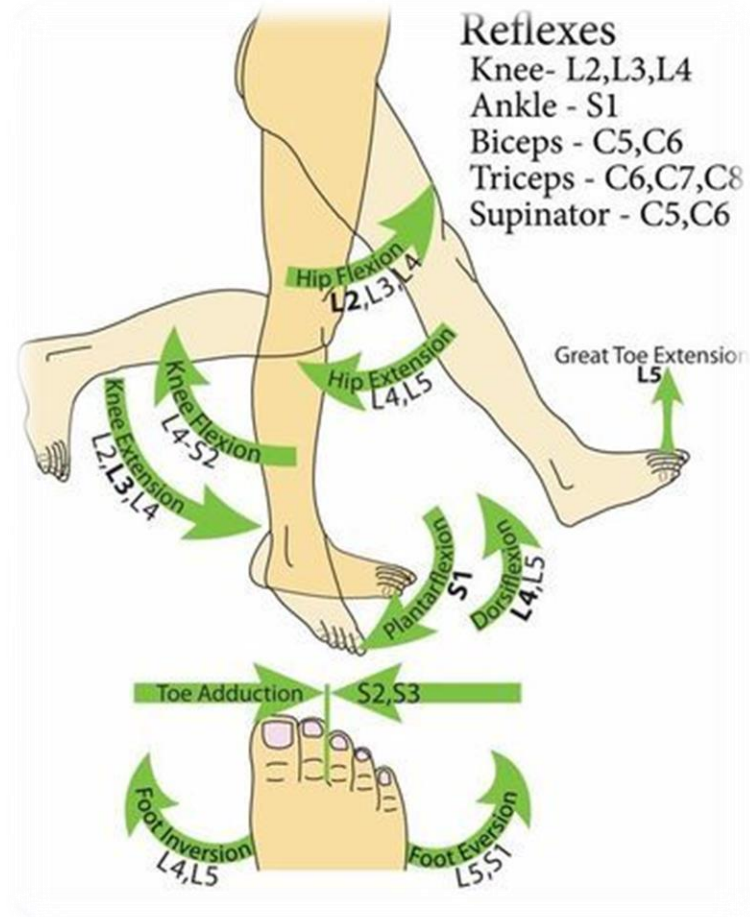
L2/3 Hip Flexors, adductors

L3/4 Knee Extensors

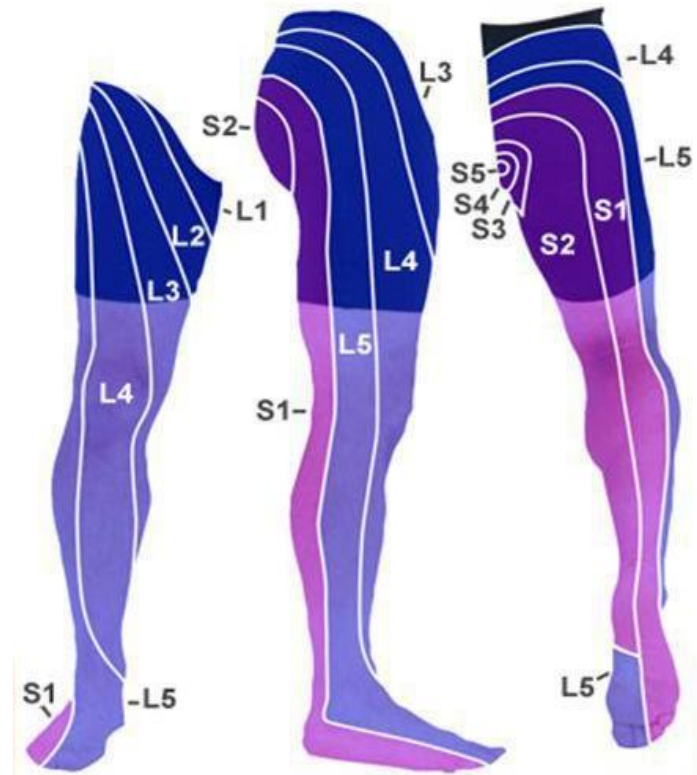
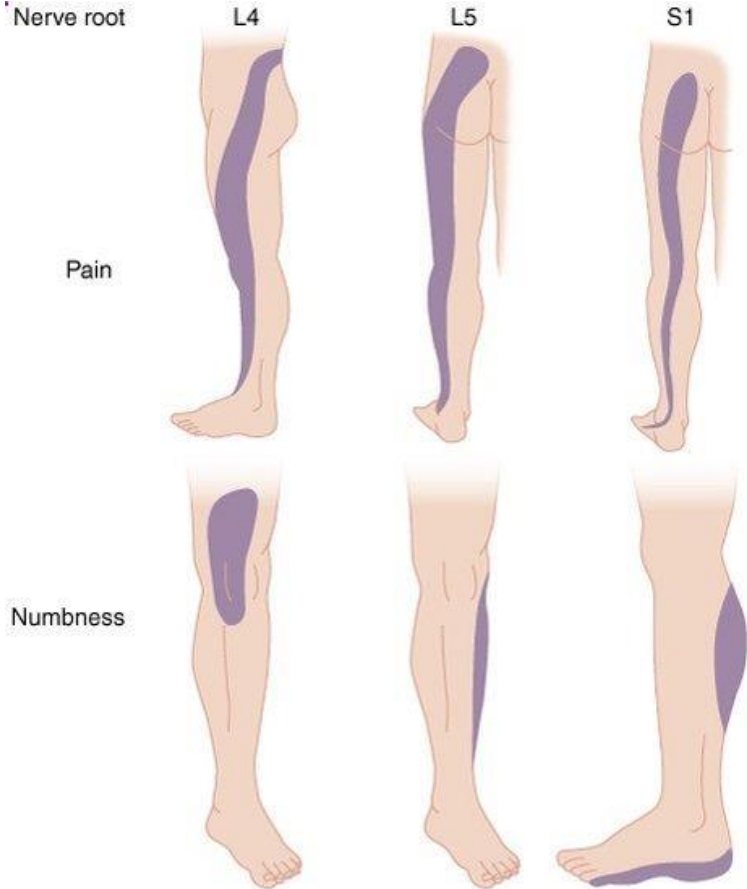
L4 Ankle Dorsiflexors

L5 EHL, Hip abductors

S1 Gastro-Soleus complex



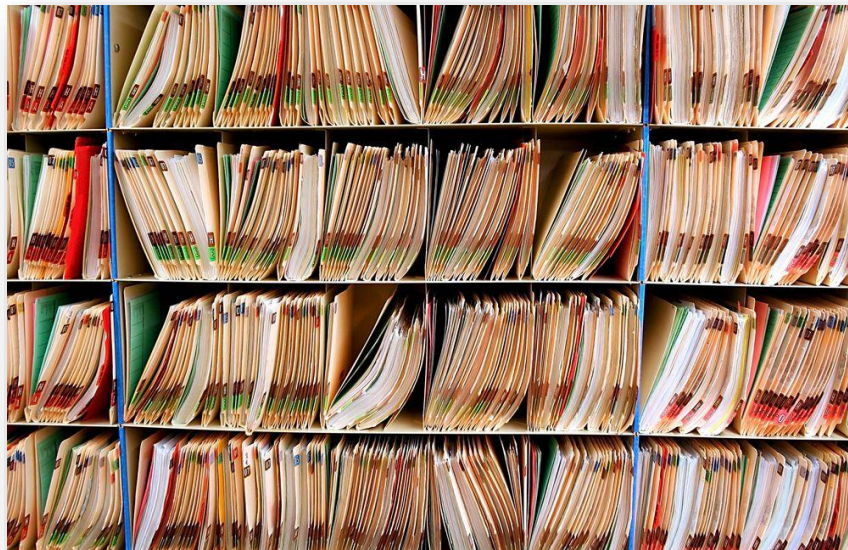
Pain Patterns of the Lower Extremity



Dermatomes of the Lower Extremities

STEP 3 IN THE CARE OF THE LBP PATIENT

Review any laboratory or imaging data
and any prior medical records.



STEP 4 ESTABLISH A PRELIMINARY DIAGNOSIS

- Non-specific low back pain (most likely)
- Radiculopathy and/or spinal stenosis
- Another specific diagnosis

Differential Diagnosis

Syndrome	Findings	Assessment/Plan
Facet syndrome	<p>History and physical examination:</p> <ul style="list-style-type: none"> – local and pseudoradicular symptoms and signs – pain on movement – facet tenderness – pain on reclination – positive injection test – joint dysfunction on manual diagnosis <p>Radiological findings (not indicated on initial evaluation):</p> <ul style="list-style-type: none"> – differentiation from high-grade or activated spondylarthrosis (possibly, juxtaforaminal cyst) or – axial spondylarthritis 	<p>Differential diagnosis:</p> <ul style="list-style-type: none"> – major joint dysfunction (blockage) – activated spondylarthrosis <p>Treatment:</p> <p>analgesics (1–3 days), muscle stabilization, manual medicine, facet injection if indicated</p>
Sacro-iliac joint syndrome	<p>History and physical examination:</p> <ul style="list-style-type: none"> – sacro-iliac joint symptoms, positive provocation test – functional leg length discrepancy – injection test <p>Radiological findings (not indicated on initial evaluation):</p> <ul style="list-style-type: none"> – differential diagnosis: inflammation (sacro-iliitis in seronegative spondylarthritis) 	<p>Functional disturbance:</p> <p>muscular imbalance</p> <p>Treatment:</p> <p>stabilizing exercises, analgesics (1–3 days) if needed, manual medicine, sacro-iliac joint injection if indicated</p>
Myofascial pain syndrome	<p>History and physical examination:</p> <ul style="list-style-type: none"> – muscle trigger points: local pain with peripheral radiation – peripheral and central sensitization <p>Radiological and histological findings:</p> <ul style="list-style-type: none"> – not indicated – no clear evidence from MRI or biopsy 	<ul style="list-style-type: none"> – pathogenesis and definitive diagnosis still unclear – (low intra- and interrater reliability) <p>Local treatment:</p> <p>active physiotherapy, manual therapy, infiltration, acupuncture</p>
Functional instability	<p>History and physical examination:</p> <ul style="list-style-type: none"> – “snapping” feeling – generalized deconditioning – pain on movement, possibly accompanied by sensory and motor deficits (reversible) – impaired proprioception <p>Radiological findings:</p> <ul style="list-style-type: none"> – no direct evidence 	<ul style="list-style-type: none"> – unclear pathogenesis and definition – treatment with manual medicine – physiotherapeutic stabilization program – caveat: surgery, differential diagnosis, structural instability

Why isn't routine imaging helpful?

- Favorable natural history of acute LBP
- Low prevalence of serious underlying conditions
 - Almost all have identifiable risk factors
- Poor correlation between common imaging findings and symptoms
- **Labeling patients** with a specific diagnosis may cause harm
 - Fear avoidance behaviors, anxiety
- **Minimal impact on clinical decision-making**
- Increase likelihood of unnecessary and potentially harmful interventions

Imaging in Spine Disorders

- MRI imaging in asymptomatic subjects > 60 y.o. (Boden et al., JBJS, 1990)
 - 36% had a herniated disc
 - 21% had spinal stenosis
 - >90% had disc degeneration, disc bulge
- Prospective MRI study among patients with MRI abnormalities prior to onset of LBP (Carragee et al., Spine Journal, 2006):
 - 84% had unchanged or improved imaging findings after symptoms

Diagnostic Imaging for Low Back Pain: Advice for High-Value Health Care From the American College of Physicians

Roger Chou, MD; Amir Qaseem, MD, PhD, MHA; Douglas K. Owens, MD, MS; and Paul Shekelle, MD, PhD, for the Clinical Guidelines Committee of the American College of Physicians*

- **History and physical guide imaging decisions**
- Indications for *immediate diagnostic imaging*
 - Major risk factors for cancer
 - Risk factors for spinal infection
 - Signs/symptoms of cauda equina
 - Severe or progressive neurologic deficits
- Otherwise trial of conservative treatment (physical therapy, etc.) first



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STEP 5

IMPLEMENT CONSERVATIVE CARE

Physical activity

Medications

Education

Follow-up

American College of Physicians guideline

CLINICAL GUIDELINE



Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians

Amir Qaseem, MD, PhD, MHA; Timothy J. Wilt, MD, MPH; Robert M. McLean, MD; and Mary Ann Forciea, MD; for the Clinical Guidelines Committee of the American College of Physicians*

- Emphasis on non-pharmacologic therapies, particularly for chronic LBP
- Stronger cautions regarding opioids
- More evidence on mind-body interventions (yoga, Tai Chi, mindfulness-based stress reduction)

RAPID RETURN TO NORMAL ACTIVITIES

Bed rest is bad for your health.

- Prolonged bed rest can make back pain worse. While in bed, the spine is elongated, hindering the regular transport of nutrients into the disc.
- Research has shown that fully hydrated discs from a night of bedrest tend to show a 3x increase in annulus stresses during morning bending activities.

Recommend a gradual and progressive increase in physical activities.

Never “...let pain be your guide”.

Educate the patient:

HURT AND **HARM**
ARE NOT SYNONYMS.

PASSIVE THERAPIES ALONE ARE OF LIMITED VALUE.

ACTIVE THERAPY

(Patient TAKES an active part in therapy)

- Stretching
- Corrective Exercising
- Myofascial Release
Active Release Techniques
- Core Stabilization



PASSIVE THERAPY

(Patient DOES NOT take an active part in therapy)

- Cold Laser
- Electrical Stimulation (E-Stim)
- Ultrasound
- Cold Therapy

&



Manipulation and Mobilization

- A systematic review and meta-analysis of manipulation and mobilization in the treatment of chronic low back pain published in 2018, found moderate-quality evidence that manipulation and mobilization decreased pain and increased function.

Coulter I, Crawford C, et al. Manipulation and mobilization for treating chronic low back pain: a systematic review and meta-analysis. *J Spine*. 2018; 18(5):866-879.

Naming spinal motion

- Spinal motion involves a vertebral unit, that is, two vertebrae with the joint between
- Spinal motion is named for the upper of the two vertebrae
 - T3 in relation to T4
 - Occiput in relation to atlas
 - Sacrum in relation to ilium

Fryette's Laws

- **Law I:** Neutral position – SB and rotation to opposite sides
 - Group dysfunctions more common
- **Law II:** Non-neutral (flexion or extension) – SB and rotation to same side
- “TONGO” (Type I Neutral Go Opposite)
- Applies only to the thoracic and lumbar spine, not cervical

Somatic dysfunction

- Impairment or altered **function** of related components of the somatic system aka a restriction that can occur in bone joints, muscles, and fascia.
- Can presents as **TART**
 - Tissue texture changes
 - Asymmetry
 - Restriction
 - Tenderness

Barriers

- **Physiologic barrier:** a point at which a patient can *actively* move any given joint
- **Anatomic barrier:** a point at which a physician can *passively* move any given joint
- In somatic dysfunction, a joint will have a **restrictive or pathologic barrier**
 - A restrictive barrier lies before the physiologic barrier and prevents full ROM

Treatment

- **Direct treatment:** practitioner engages the restrictive barrier (towards)
- **Indirect treatment:** practitioner moves tissues away from the restrictive barrier
- **Active treatment:** patient will assist in the treatment
- **Passive treatment:** patient will relax and allow practitioner to move them

Treatment plan pearls

- Elderly patients respond better to indirect techniques and gentle direct techniques
- Acute neck strain/sprain better treated with indirect techniques
- For sicker patients, limit OMT to a few key areas
- Suboccipital or paravertebral muscle spasms are usually associated with upper thoracic or rib problems on same side; may treat these prior to treating cervical spine

Myofascial release

- Palpate the restriction
 - Direct: move myofascial tissue toward the barrier
 - Indirect: move myofascial tissue away from the barrier
- Add twisting or transverse forces
- Use enhancers
- Await the release
- Goal: restore balance and function; improve lymphatic flow
- Relative contraindications: bacterial infection, fracture, cancer

Counter-strain

- Passive indirect technique in which the tissue being treated is positioned at a point of balance or ease away from the restrictive barrier
- Locate and palpate a tender point
 - Tender point is a small dense edematous area of tenderness about the size of a fingertip
- Place patient in position of comfort and shorten the muscle around the the tender point
- Hold for 90 seconds while patient is relaxed
- Slowly return to neutral

Muscle energy

- Patient actively uses his muscles to form a precisely controlled position in a specific direction against a counterforce
- Usually, direct treatment and engage the barrier
- May repeat 3-5 times
- Contraindications: surgical patients or ICU patients

High velocity low amplitude

- Passive, direct technique that uses HVLA to remove motion loss in a somatic dysfunction
- Position in a restricted joint against its restrictive barrier and then thrust past the barrier
- “Kirskville Crunch”
- Lumbar: lumbar roll – lateral recumbent in front of patient , flex legs till you feel motion at the segment
- **Absolute contradictions: Osteoporosis, osteomyelitis, fractures, bone mets, and RA**
- **Relative contraindications: Acute whiplash, pregnancy, HNP, anticoagulation, vertebral artery ischemia and/or atherosclerosis**

STEP 5a

PHYSICAL ACTIVITY

- The role to educate and monitor the patient's progress.
- Most of the planned activities do not require medical supervision or high technology: a gym will do.
- Group activities are often helpful.

Recommendation: Self-care and education

Provide patients with evidence-based information about their expected course, advise patients to remain active, and provide information about effective self-care options.

STEP 5b

MEDICATIONS

- Adjuncts to comprehensive therapies
- No role for anxiolytics (benzos) in most pts
- Opioids for short-term use ONLY
- NSAIDs may be helpful; watch for side-effects

Nonopioid Analgesic Medications

- In a 2017 study, NSAIDs were found to have **significant improvement in pain and disability** in patients with chronic low back pain, as compared to placebo and non-drug treatments.
- NSAIDs provide **modest symptomatic relief for acute back pain**. In a 2008 systematic review and meta-analysis of 11 randomized trials, symptomatic improvement after one week was modestly greater for patients with acute back pain treated with NSAIDs compared with placebo.

1. Enthoven WTM, Roelofs PD, Koes BW. NSAIDs for Chronic Low Back Pain. *JAMA*. 2017;317(22):2327–2328. doi:10.1001/jama.2017.4571

2. Agency for Healthcare Research and Quality (AHRQ). Noninvasive treatments for low back pain. AHRQ Publication No. 16-EHC004-EF. February 2016. <https://effectivehealthcare.ahrq.gov/ehc/products/553/2178/back-pain-treatment-report-160229.pdf>

3. Roelofs PD, Deyo RA, Koes BW, et al. Non-steroidal anti-inflammatory drugs for low back pain. *Cochrane Database Syst Rev* 2008 ; :CD000396.

4. Machado GC, Maher CG, Ferreira PH, et al. Non-steroidal anti-inflammatory drugs for spinal pain: a systematic review and meta-analysis. *Ann Rheum Dis* 2017.

Acetaminophen

- 2016 Cochrane review concluded that there was high-quality evidence that acetaminophen showed **no benefit** compared with placebo in acute low back pain.
- There is also evidence that the addition of acetaminophen to short-term NSAID therapy provides **no further benefit**

Negative Impact

- NSAIDs were associated with more side effects compared with either placebo or acetaminophen.
- NSAIDs may have significant renal, gastrointestinal, and cardiovascular adverse effects and may be contraindicated in some patients.
 - All NSAID toxicities are more common in older patients.

Muscle Relaxants

- Muscle relaxants provide **short-term, symptomatic relief** for patients with acute low back pain. A 2003 systematic review found high-quality evidence that nonbenzodiazepine muscle relaxants are more effective than placebo for short-term relief of acute low back pain.
- A subsequent 2021 meta-analysis including 17 randomized trials also found that nonbenzodiazepine muscle relaxants had a **benefit in reducing short-term pain**.
- There is some evidence that **cyclobenzaprine, methocarbamol, carisoprodol, and tizanidine** are more effective than other muscle relaxants.

1. Friedman BW, Irizarry E, Solorzano C, et al. Diazepam Is No Better Than Placebo When Added to Naproxen for Acute Low Back Pain. *Ann Emerg Med* 2017.

2. van Tulder MW, Touray T, Furlan AD, et al. Muscle relaxants for non-specific low back pain. *Cochrane Database Syst Rev* 2003; :CD004252.

3. Cashin AG, Folly T, Bagg MK, et al. Efficacy, acceptability, and safety of muscle relaxants for adults with non-specific low back pain: systematic review and meta-analysis. *BMJ* 2021; 374:n1446.

Negative Impact

- The primary adverse effects (sedation, dizziness) of muscle relaxants relate to their central nervous system and anticholinergic activity; these are more likely to be problematic in older patients.
 - Dependence and abuse potential are concerns with benzodiazepines.
 - Carisoprodol also has abuse potential, particularly in patients with a history of substance abuse
- Patients who can tolerate the potential sedating effects of these medications may benefit from the addition of a nonbenzodiazepine muscle relaxant to initial pharmacotherapy

Antidepressant Medications

- Serotonin-norepinephrine reuptake inhibitor (SNRI) ~ Duloxetine
 - Low back pain and osteoarthritic pain patients demonstrated at least 50% reduction in pain at approximately 4-5 weeks



Opioid Medications

- In general, the use of opioids to most patients with new or chronic spine pain is not recommended, except for those with severe intractable pain unresponsive to other therapies.
- Opioid therapy is commonly considered for patients with severe pain that is inadequately controlled with NSAIDs and acetaminophen.
 - However, no high-quality trials have evaluated opioids specifically for acute radiculopathy given the lack of proven efficacy, the potential for serious side effects, and the potential for misuse and abuse.

Negative Impact for the Workplace

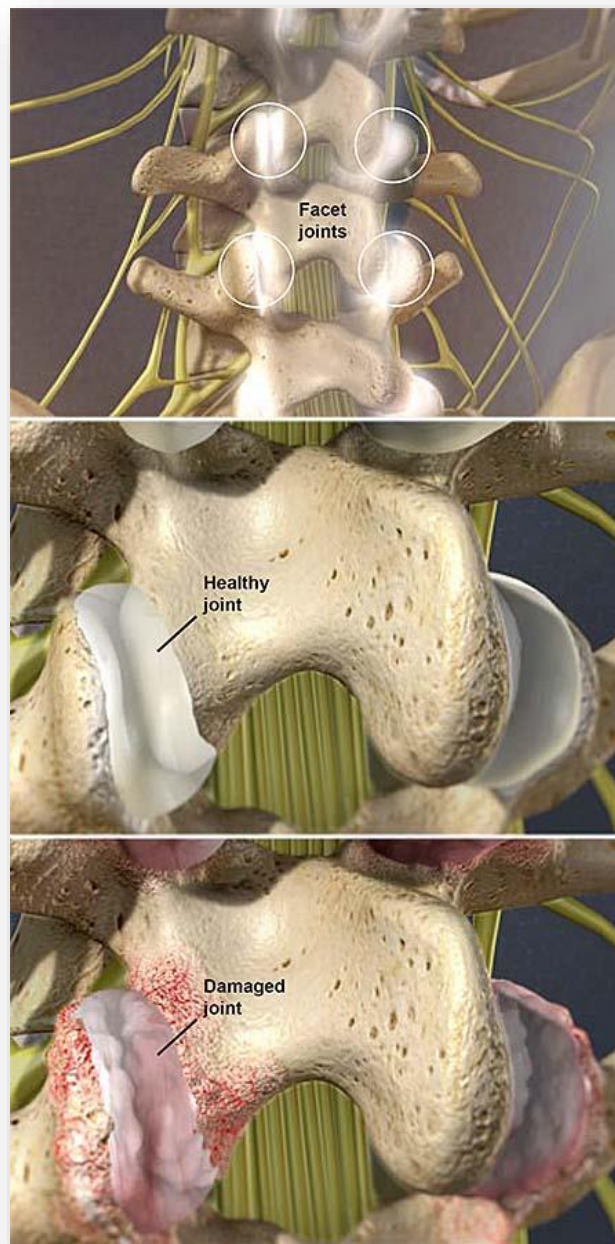
- If opioids are used, we need to make efforts to reduce the risk of dependency and addiction:
 - Using short-acting opioid analgesics for the treatment of acute pain only when the severity of the pain is reasonably assumed to warrant their use
 - Starting with the lowest possible effective dose
 - Prescribing no more than a short course of opioid analgesics for acute pain (some would allow for up to two weeks)
 - Avoiding initial treatment with long-acting or extended-release opioid analgesics
- Adverse effects of opiates include sedation, confusion, nausea, and constipation.
 - Respiratory depression is an issue at higher doses but rarely at the doses used for acute back pain. As with other medications, older patients are more susceptible to these adverse effects.

1. Juurlink DN, Dhalla IA, Nelson LS. Improving opioid prescribing: the New York City recommendations. JAMA 2013; 309:879.

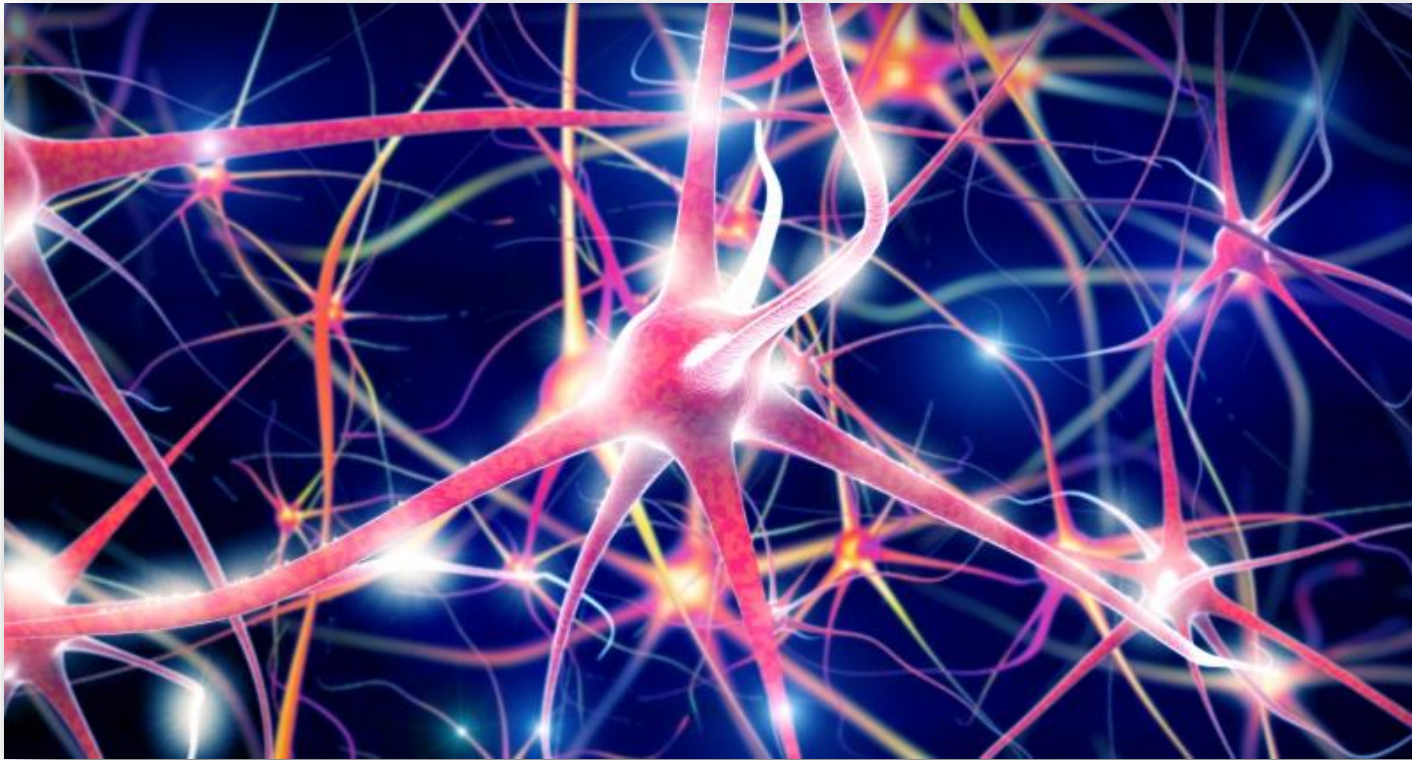
2. New York City Emergency Department Discharge Opioid Prescribing Guidelines Clinical Advisory Group. New York City emergency department discharge opioid prescribing guidelines. www.nyc.gov/html/doh/downloads/pdf/basas/opioid-prescribing-guidelines.pdf

Mechanical Pain

- A 2018 review showed **little or no evidence of benefit** for acetaminophen, antidepressants (except duloxetine), skeletal muscle relaxants, lidocaine patches, and transcutaneous electrical nerve stimulation in the treatment of chronic back pain.
- Additionally, there was **moderate evidence that supports the use** of nonsteroidal anti-inflammatory drugs, opioids, and topiramate in the short-term treatment of mechanical low back pain.



Neuropathic Pain



Systemic Glucocorticoid Medications

- Systemic glucocorticoid treatment may provide partial pain relief for select patients with acute lumbosacral radiculopathy.
- Benefits are likely modest but employ a course of oral prednisone (60 to 80 mg daily) for five to seven days for patients with acute lumbosacral radiculopathy who do not respond well to analgesics and activity modification. This is followed by a rapid taper to discontinuation over the following 7 to 14 days.
- Overall, the available evidence suggests that systemic glucocorticoid therapy has either limited benefit or no benefit

Systemic Glucocorticoid Medications

- A 2017 systematic review and practice guideline from the American College of Physicians evaluated six randomized trials of moderate quality and concluded that systemic glucocorticoids have no benefit on pain and minimal or no functional benefit in patients with radicular low back pain.
- One randomized controlled trial, showed 269 patients who had radicular pain for three months or less were randomly assigned in a 2:1 ratio to oral prednisone (five days each of 60, 40, and 20 mg per day) or placebo. At 3 weeks, the improvement in disability scores was modestly higher in the prednisone group, a result that was statistically significant but of marginal clinical importance.

1. Goldberg H, Firtch W, Tyburski M, et al. Oral steroids for acute radiculopathy due to a herniated lumbar disk: a randomized clinical trial. *JAMA* 2015; 313:1915.

2. Qaseem A, Wilt TJ, McLean RM, et al. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. *Ann Intern Med* 2017; 166:514.

3. Chou R, Deyo R, Friedly J, et al. Systemic Pharmacologic Therapies for Low Back Pain: A Systematic Review for an American College of Physicians Clinical Practice Guideline. *Ann Intern Med* 2017; 166:480.

Antiepileptic Medications

- A total of 18 out of 25 placebo-controlled RCTs of pregabalin (150–600 mg/day) demonstrated positive response in decreasing pain, with high final quality of evidence.
- 14 RCTs of gabapentin (900–3600 mg/day) (nine positive) and 6 RCTs of gabapentin ER (1200–3600 mg/day) (four positive).
- Most studies using other antiepileptic drugs were negative. Topiramate, zonisamide, and oxcarbazepine/carbamazepine had the poorest safety profile

Antiepileptic Medications

- Gabapentin vs Pregabalin
 - RCTs comparing pregabalin (75 mg to 300 mg daily) with gabapentin (300 mg to 2,400 mg daily) or gabapentin (1200 mg to 3600 mg daily) and found no difference between the drugs in pain relief, function, quality of life, or sleep interference

Antidepressant Medications

- Tricyclic antidepressant (TCA) ~ Amitriptyline/Nortriptyline
- Serotonin-norepinephrine reuptake inhibitor (SNRI) ~ Duloxetine, Milnacipran
 - A 2017 study had demonstrated a more than 20-point decrease in neuropathic leg pain levels

1. Moore RA, Cai N, Skljarevski V, Tölle TR. Duloxetine use in chronic painful conditions--individual patient data responder analysis. *Eur J Pain*. 2014 Jan;18(1):67-75.
2. Shimada Y, Inage K, Orita S, Koda M, Yamauchi K, Furuya T, Nakamura J, Suzuki M, Fujimoto K, Shiga Y, Abe K, Kanamoto H, Inoue M, Kinoshita H, Norimoto M, Umimura T, Takahashi K, Ohtori S. Effect of duloxetine on neuropathic pain in patients intolerant to continuous administration of pregabalin. *Spine Surg Relat Res*. 2017 Dec 20;1(1):40-43

Side Effects

- Common side effects identified in clinical trials are nausea, dry mouth, dizziness, constipation, insomnia, asthenia, and hypertension can be seen with duloxetine.
- Milnacipran can also have blood pressure and pulse elevations but can also cause issues with dysuria.

Opioid Medications

- Tapentadol (Nucynta) ~ only opioid FDA approved for the management of neuropathic pain
 - Mu-opioid agonist that inhibits ascending pain pathways by mediating neuronal excitability via suppression of presynaptic release of GABA.

Topical Medications

- Local anesthetics (e.g., lidocaine, bupivacaine and mepivacaine), anesthetic agents (e.g., ketamine), muscle relaxants (e.g., baclofen), capsaicin, anti-inflammatory drugs (e.g., diclofenac), salicylates, antidepressants (e.g., amitriptyline and doxepin), $\alpha 2$ adrenergic agents (e.g., clonidine), or even a combination of them have been tested in various applications for the treatment of neuropathic pain.
- Few of them have reached a sufficient level of evidence to support systematic use as treatment options.
- Relatively few systemic side effects or drug-drug interactions and satisfactory efficacy seem to be the benefits of topical treatments.

Topical Medications

- A 2015 study looking at the anesthetic effect of EMLA cream (2.5% -2.5% lidocaine/prilocaine) had shown to reach a maximal depth of 3 mm after a 60-min application, and 5 mm after a 120-min application.
- Dermal analgesia can be expected to increase for up to 3 h under occlusive dressing and persist for 1-2 h after removal of the cream.
- 10.56% lidocaine cream has a maximum depth of numbing at 8mm after 60-110 minutes.

Summary of Doses

- Gabapentin effective dose 1200-3600 mg/day
- Pregabalin effective dose 300-600 mg/day
- Duloxetine effective dose 60-120 mg/day
- Amitriptyline effective dose 25-150 mg/day

STEP 5d

FOLLOW-UP

- Planned follow-up reduces health care consumption.
- Re-assess if unsatisfactory progress.
- Physician as teacher and leader.

STEP 6: REASSESSMENT AT 4-6 WEEKS

- If symptoms persist unabated, look for impediments to recovery.
- Consider imaging studies if clinical signs and symptoms are suspicious.
- Know the consultant to whom you refer the patient.

**PREVENTION OF
DISABILITY SHOULD BE
THE PRIMARY OUTCOME
GOAL FOR ALL PATIENTS
WITH LOW BACK AND LEG
PAIN.**

**THE NATURAL
HISTORIES OF ACUTE,
RECURRENT AND
CHRONIC LOW BACK
PAIN AND SCIATICA ARE
RELATIVELY BENIGN.**

Identify and address risk factors for chronicity

Small proportion of patients with acute LBP go on to develop persistent LBP, but account for the majority of costs

Psychosocial factors are the strongest predictor for chronicity

Stratified care more effective than usual care for function also cost effective

Advice and self-care for low back pain

- Inform patients of generally favorable prognosis of acute LBP with or without sciatica
- Discuss need for re-evaluation if not improved
- Advise to remain active
- Counsel that hurt and harm are not synonymous
- Consider self-care education books
- Superficial heat moderately effective for acute low back pain
- No evidence to support use of lumbar supports

Recommendation:

Nonpharmacological therapies

- For patients who do not improve with self-care options, consider the use of non-pharmacologic therapy with demonstrated benefits.
- For chronic low-back pain, options include: intensive interdisciplinary rehabilitation, exercise therapy, cognitive-behavioral therapy, yoga, mindfulness-based stress reduction, acupuncture, massage therapy, or spinal manipulation.
- For acute low-back pain, options include: exercise, acupuncture, manipulation.

Goals of Rehabilitation for LBP

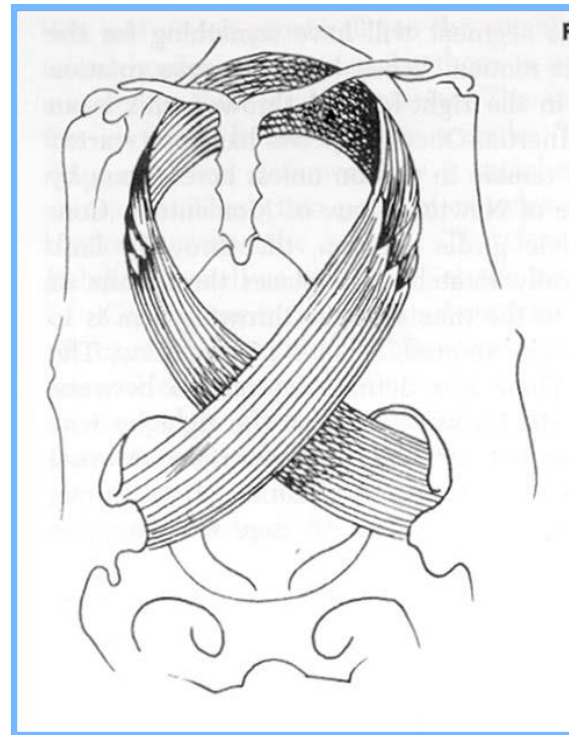
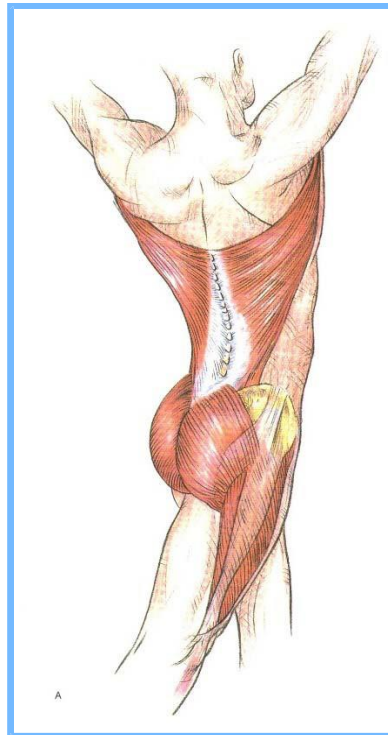
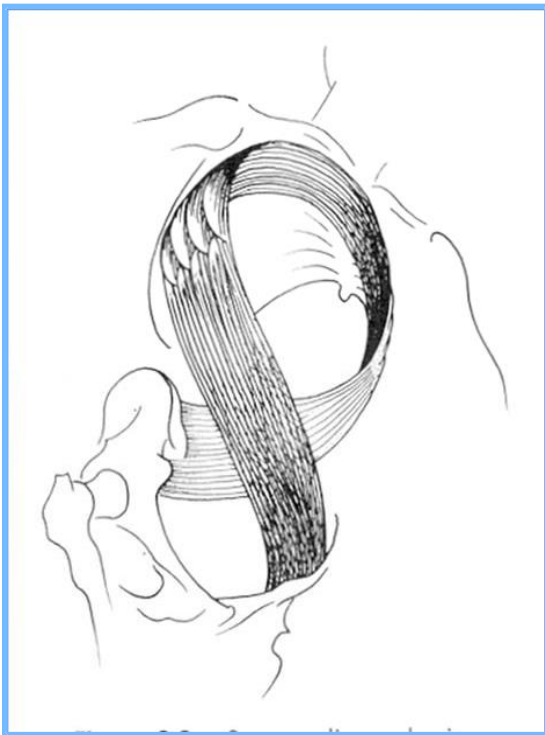
- Improved ability to achieve self-sedation
- Abdominal and lumbar muscle strengthening
- Increased hip and lumbar spine mobility
- Improved lumbar and pelvic proprioceptive sensibility
- Intervertebral joint stabilization
- Lumbar posture modification and improved general fitness.

Approach to use of non-pharmacologic therapies for LBP

- Emphasis on active rather than passive therapies
 - Exercise therapies, cognitive-behavioral therapy as first-line treatments
 - **Focus on function**, not just pain
 - Address maladaptive coping behaviors such as **fear-avoidance**, **catastrophizing**
 - Yoga, mindfulness-based stress reduction, Tai Chi options
 - Interdisciplinary rehabilitation for patients with severe functional impairment or strong psychosocial component
 - Manipulation, acupuncture, massage as adjunctive therapy
 - Physical modalities that are passive are not well supported by evidence

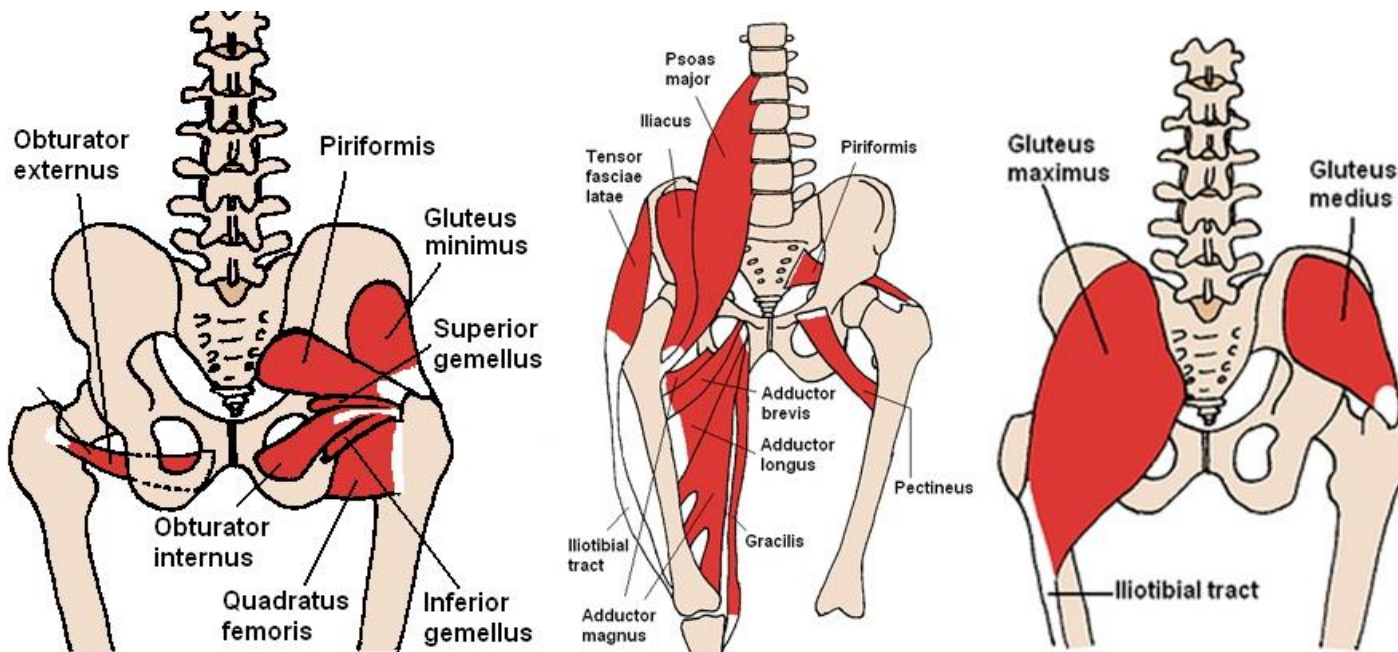
Core Conditioning Anatomy

Muscle Anatomy is multi-planar!



Hip Girdle

- Significant role in core stability and LE force transfer
- Gluteals: Decreased endurance, delayed firing leading to LE instability and LBP
- Study by Nadler: Athletes with LBP had asymmetry in HE strength



Movement Control Exercises

- A systematic review and meta-analysis of the effectiveness of movement control exercise on patients with non-specific low back pain and movement control impairment (MVCE) showed:
 - There was moderate quality evidence of a positive effect of MVCE on disability, both at the end of treatment and after 12 months

Pilates

- Pilates improves flexibility, builds strength and develops control and endurance in the entire body.
- It puts emphasis on **alignment**, breathing, developing a **strong core**, and improving **coordination and balance**.
 - The core, consisting of the muscles of the abdomen, low back, and hips, is often called the "powerhouse" and is thought to be the key to a person's stability.
- Most clinical trials in the past several years have found Pilates to be an effective rehabilitation tool that has resulted in desired outcomes, such as reducing pain and disability

McKenzie Method

- Depending on the classification and the nature of the underlying cause of disablement, certain treatment protocols are used.
 - There will be limited mobility and the position will likely cause discomfort, but the patient repeats the exercises one after the other until centralization occurs, pain symptoms subside, and mobility to end-range increases.
 - A literature review with meta-analysis in patients with chronic LBP found moderate- to high-quality evidence that McKenzie method was superior to other rehabilitation interventions in reducing pain and disability

Walking for LBP

- The advantage of walking is that it is **easy to carry out**. In chronic low back pain, a meta-analysis of nine suitable randomized controlled trials was performed to understand the effectiveness of walking on disability, pain, and quality of life at follow-up visits.
 - In short- and intermediate-term follow-ups, walking was found (with low- to moderate-quality evidence) to be as effective as other non-pharmacological interventions in decreasing disability and pain, and was recommended

The main concepts from this session:

- Rates of LBP and associated costs are increasing despite more aggressive testing and treatment
- Use evidence-based principles to inform more effective and efficient care
- Shift away from routine imaging and diagnostic testing
- Early identification and management of psychosocial contributors to pain
- Focus on function, not just pain
 - Set achievable functional goals
- Self-care and education in all patients
- Focus on use of active nonpharmacological therapies
 - Passive therapies in adjunctive role
- Non-invasive approaches to most LBP

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QUESTIONS?

