

Conservative Interventions for Low Back Pain

Non-pharmacological/Non-surgical Chiropractic Therapeutic
Interventions to Low Back Pain

Biography & Disclosures

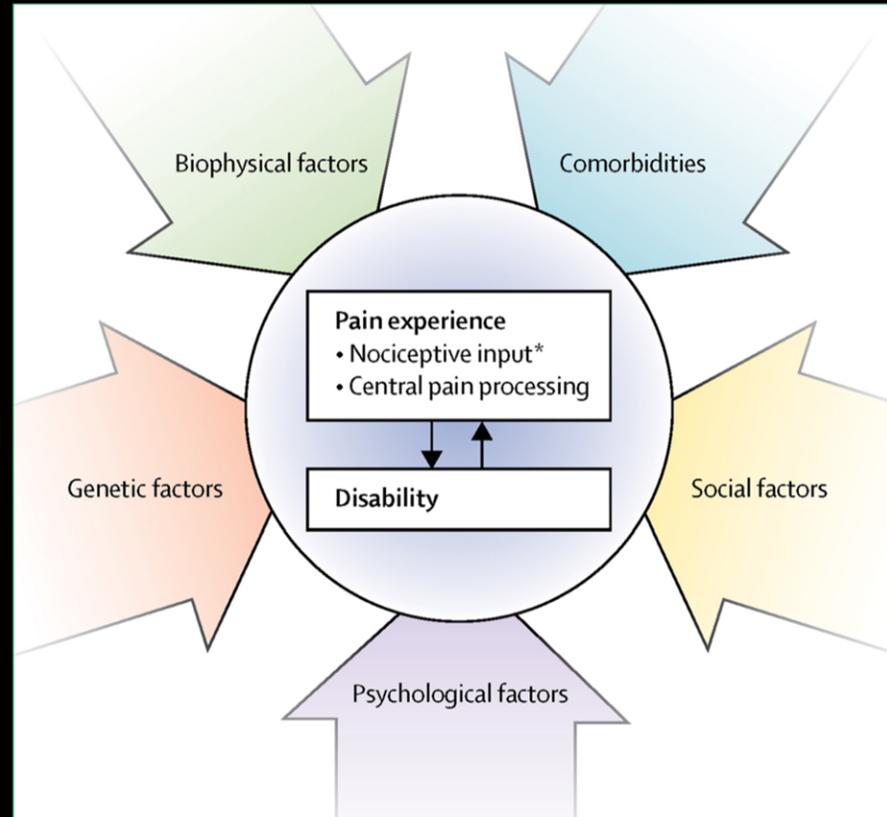
- Dr. Vincent DeBono received his Doctor of Chiropractic degree from the National University of Health Sciences and his Doctorate in Health Profession Education from Logan University. After graduating chiropractic school he entered private practice focusing on comprehensive treatment of the musculoskeletal system and sports-related injuries. He then transitioned to higher education administration at focusing on curriculum development and assessment in first professional programs, primarily in chiropractic education. His current position is Vice President of Research & Innovation at Logan University in Chesterfield Missouri. Dr. DeBono has extensive experience in teaching postgraduate courses in identification and treatment strategies of dysfunctional myofascial patterns. He has had the opportunity to teach these courses throughout the United States, Europe and Asia. Dr. DeBono has also had the opportunity to present posters and platform presentations on integrative therapeutic and educational strategies at numerous medical education conferences including the 2018 World Federation of Chiropractic (WFC) Education Conference in London, England, the 2017 Association of Medical Educators (AMEE) of Europe in Helsinki, Finland and the 2012 ICE-CIM Conference at Georgetown Medical School.
- Disclosures – Dr. DeBono has no relevant financial or non-financial relationships to disclose.

Low Back Pain Prevalence

- Low Back Pain is globally the most common musculoskeletal complaint globally.
- Leading cause of limitation of activity as well as absenteeism from work.
- Tremendous medical burden with significant and far reaching economic cost to the health care system.
- Considered a major global public health issue.

- Wu A, March L, Zheng X, et al. Global low back pain prevalence and years lived with disability from 1990 to 2017: estimates from the Global Burden of Disease Study 2017. *Ann Transl Med.* 2020;8(6):299. doi:10.21037/atm.2020.02.175

Low Back Pain Multifactorial Diagnosis



Low Back Pain Educational Perspectives

- Biomedical constructs dominate clinician training.
- It is unknown the extent to which health science students understand the psychosocial determinates of a patient's low back pain.
- A recent scoping review to report health science students' current knowledge of psychosocial factors associated with low back pain found the training in this aspect of low back pain care needs to be addressed.
- Lewis, K.L., Battaglia, P.J. Knowledge of psychosocial factors associated with low back pain amongst health science students: a scoping review. *Chiropr Man Therap* **27**, 64 (2019). <https://doi.org/10.1186/s12998-019-0284-5>

Low Back Pain Lesion-based approach

- Traditional biomedical models, including the chiropractic model, have focused on a lesion-based approach to treating low back pain.
- In the chiropractic model this has historically been connected to the aberrant Inter segmental motion within the spine commonly referred to in the profession as the subluxation.
- However, the preponderance of emerging evidence and current clinical guidelines across professions is that a multifactorial approach which also takes into account the psychosocial aspects is key in effective treatment of low back pain.
- Ikemoto T, Miki K, Matsubara T, Wakao N. Psychological Treatment Strategy for Chronic Low Back Pain. *Spine Surg Relat Res.* 2018;3(3):199-206. Published 2018 Oct 10. doi:10.22603/ssrr.2018-0050

Low Back Pain Chiropractic Approach

- As illustrated by a recent Consensus Process of chiropractic treatment in the VA system the following clinical discussion guidelines were published in terms of treatment of low back pain by chiropractors.
- Vining RD, Shannon ZK, Salsbury SA, Corber L, Minkalis AL, Goertz CM. Development of a Clinical Decision Aid for Chiropractic Management of Common Conditions Causing Low Back Pain in Veterans: Results of a Consensus Process. *J Manipulative Physiol Ther.* 2019;42(9):677-693. doi:10.1016/j.jmpt.2019.03.009

Evidenced-Based Stepped Approach

Stepped Process for Chiropractic Management of Low Back Pain

- STEP 1**
- Chiropractic evaluation identifies likely pain source(s) and contraindications to chiropractic care
 - Patient may present with multiple likely pain sources

Pain source(s) identified as actual or threatened damage to non-neural tissue				Pain source(s) identified as a lesion or disease of the somatosensory system			Pain source(s) identified as visceral/other illness
Discogenic pain	Sacroiliac joint pain	Facet joint pain	Myofascial pain	Radiculopathy: sensory/motor loss from blocked axon signaling	Radicular pain: ectopic activation of nociceptive fibers within a spinal nerve	Neurogenic claudication: intermittent nerve root(s) compression and/or ischemia	Not candidate for chiropractic care Refer as appropriate

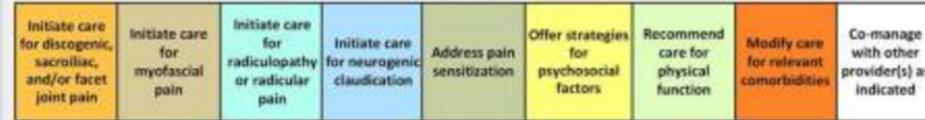
- STEP 2**
- Consider if pain is amplified by peripheral or central sensitization and how contributing factors such as psychosocial conditions, physical function/conditioning, and comorbid conditions may impact care and recovery



- STEP 3**
- Provide patient education on LBP and associated condition(s)
 - Outline multimodal chiropractic care and multidisciplinary treatment options
 - Patient preferences and resources inform joint decision-making on management approach

Opts in to chiropractic care				Opts out of chiropractic care
Condition-specific patient education	Multimodal chiropractic care options	Multidisciplinary treatment options	Patient preferences and resources	Refer as appropriate

- STEP 4**
- Doctor and patient initiate selected approaches to multimodal chiropractic care which may include passive, transitional, active and/or self-management strategies



- STEP 5**
- Monitor patient response
 - Consider modifying treatment plan as indicated

Favorable response to chiropractic care			Limited or poor response to chiropractic care				
Continue treatment	Modify to address improvement	Consider treatment withdrawal plan	Re-evaluate diagnosis	Modify treatment	Discharge from care	Refer to appropriate provider	Co-manage with other provider

Color coding corresponds to the table: Evidence-based interventions for problems contributing to low back pain

Components of Chiropractic Care

COMPONENTS OF MULTIMODAL CHIROPRACTIC CARE

Component 1: Education	Care should include education to inform patients about their condition, interventions, and to foster health literacy. The goal of education is to provide information to enable patients to make appropriate healthcare decisions. Education can provide long term reassurance and it is recommended to help patients manage chronic conditions. Low health literacy is associated with poor health outcomes through limiting the capacity to acquire self-care knowledge and skills.
Component 2: Passive interventions	Passive interventions require patients to receive treatment rendered by another person, such as spinal manipulation. Continuous dependence on passive treatments can reinforce patient feelings of powerlessness, create dependency on providers, and place the majority of pain management responsibility on providers.
Component 3: Transitional interventions	Transitional interventions are monitored or guided by a provider but performed by a patient during active care to reinforce or enhance the effectiveness of provider based passive treatment. An example of transitional treatment is repeated motion exercise, designed for patients to conduct on their own and between visits to reduce pain and improve flexibility.
Component 4: Active interventions	Active interventions are controlled and performed by a patient independent from passive or transitional interventions. Examples of active interventions are mindfulness, general exercise, yoga, and tai chi.
Component 5: Self-management	Self-management refers to a process individuals use to self-monitor, control and/or reduce the impact of a condition over time. This continuous process requires sufficient knowledge of a condition and skills necessary to maintain good psychosocial function.
Component 6: Visit frequency and duration	Visit frequency and duration should be determined by synthesizing clinical information such as the diagnosis, physical condition, care goals, intervention options, and expected response. Though a general visit frequency and duration should be planned before treatment begins, response to care and changes in patient presentation, or other new information, may warrant changing a prescribed visit frequency and duration at any point during care.

Common Chiropractic Interventions

COMMON CHIROPRACTIC INTERVENTIONS

Interventions	Description	Suspected/Proposed Mechanisms	Goal(s)
Spinal manipulation	<ul style="list-style-type: none"> High-velocity, low amplitude (thrust) Low-velocity variable amplitude (non-thrust) 	<ul style="list-style-type: none"> Central nervous system pain processing effects Tissue stretch, other mechanical and neurophysiological mechanisms influencing joint/ regional mobility 	<ul style="list-style-type: none"> Pain reduction Improved joint/regional mobility
Friction massage	<ul style="list-style-type: none"> Repeated manual or manually controlled rubbing to generate friction within myofascial tissues 	<ul style="list-style-type: none"> Temporary increase blood/lymphatic flow Disrupt or stretch tissue or fibers restricting movement between adjacent soft tissue layers 	<ul style="list-style-type: none"> Reduce pain Improve motion between or within myofascial tissues
Myofascial techniques	<ul style="list-style-type: none"> Pressure applied to soft tissues, sometimes combined with stretching or movement 	<ul style="list-style-type: none"> Disrupt or stretch tissue or fibers restricting movement between adjacent soft tissue layers Mechanically stimulate lymphatic flow 	<ul style="list-style-type: none"> Improve joint or myofascial tissue motion Reduce pain Improve local tissue circulation
Strengthening, fitness, motor control, or stability exercise	<ul style="list-style-type: none"> Activities focused on developing strength, endurance, coordination, or joint/regional stability through enhancing muscular function 	<ul style="list-style-type: none"> Improve muscle strength, endurance, and/or coordination through exercises designed to enhance targeted performance 	<ul style="list-style-type: none"> Improve performance of specific activities Reduce pain and/or prevent injury during activity
Neurodynamics (neural mobilization)	<ul style="list-style-type: none"> Carefully controlled movement of head, spine, or limb(s) causing nerve stretching or movement 	<ul style="list-style-type: none"> Reducing abnormal tension and/or stretching/disrupting adhesions located around nerves Desensitize neural structures 	<ul style="list-style-type: none"> Reduce nerve-related pain Improve lower extremity mobility Reduce/prevent fibrous nerve entrapment
Graded exposure training	<ul style="list-style-type: none"> Graded activity and exposure to progressively more functional activities and behaviors using a cognitive behavioral approach 	<ul style="list-style-type: none"> Reducing peripheral and central sensitization mechanisms Improving understanding of condition 	<ul style="list-style-type: none"> Reduce fear of safe to perform activities Progressive functional improvement
Directional preference exercise	<ul style="list-style-type: none"> Repeated movement causing symptom centralization, reduction, or improved range of motion 	<ul style="list-style-type: none"> Relieves and/or reduces mechanical irritation or inflammation of pain producing tissue(s) 	<ul style="list-style-type: none"> Reduce pain Increase range of motion Encourage self-care
Low level laser	<ul style="list-style-type: none"> Non-invasive light from specialized gas, liquid, crystal, dye, or semiconductor 	<ul style="list-style-type: none"> May produce anti-inflammatory effects and/or stimulate other physiological changes within tissues 	<ul style="list-style-type: none"> Stimulate tissue repair

Low Back Pain Chiropractic Approaches

Evidence-Based Interventions for Problems Contributing to Low Back Pain

Problem	Interventions
Discogenic pain, Facet joint pain, Sacroiliac joint pain	<ul style="list-style-type: none"> • Education about condition • Spinal manipulation • Motor control exercise • Directional preference exercises • Heat, massage, low-level laser, stretching, massage, home exercise • General self-care and self-management advice
Myofascial pain	<ul style="list-style-type: none"> • Education about condition • Myofascial oriented therapies such as ischemic compression as indicated • Motor control exercise • Spinal manipulation • Heat, low-level laser, massage, stretching, home exercise • Mindfulness-based stress reduction, tai chi, yoga, progressive relaxation
<p>Radicular pain: ectopic activation of nociceptive fibers within a spinal nerve.</p> <p>Radiculopathy: sensory and/or motor loss from blocked axon signaling</p>	<ul style="list-style-type: none"> • Education about condition • Neurodynamics (neural mobilization) when tolerated • Spinal manipulation • Directional preference exercise • Exercise
Neurogenic claudication: intermittent nerve root(s) compression and/or ischemia	<ul style="list-style-type: none"> • Education about condition • Spinal manipulation • Neurodynamics (neural mobilization) • Muscle stretching • Lumbar mobilization exercise • Goal setting, graded activity, pacing, relaxation, body positioning techniques • Home exercise when tolerated
Pain amplified through peripheral or central sensitization mechanisms	<ul style="list-style-type: none"> • Education about condition • Graded exposure training • Mindfulness-based stress reduction • Myofascial therapy to prevent and/or manage myofascial derangement from painful postures and/or movements • Spinal manipulation
Psychosocial factors or conditions	<ul style="list-style-type: none"> • Education to prevent/reduce fear, passive coping, catastrophizing, and promote self-efficacy • Mindfulness-based stress reduction • Acceptance and commitment therapy • Cognitive behavioral therapy • Refer/co-manage with mental health provider when appropriate
Muscle weakness or lack of overall fitness	<ul style="list-style-type: none"> • Education about condition • Activity specific or physical fitness exercise • Self-management advice to improve fitness/strength
Muscle coordination leading to lack of functional spinal stability	<ul style="list-style-type: none"> • Education about condition • Motor control or other exercise training • Spinal stabilization or other forms of exercise such as brisk walking or cycling • Self-management advice such as movement-based strategies for spine stability

Low Back Pain Frontiers & Conclusion

- While we continue to emphasize the need to train our students and graduates in embracing the biopsychosocial approach to low back pain, Logan University continues to investigate and explore the physiological effects of pathoanatomical lesion contributions to better our understanding of the effects of chiropractic interventions.
- These include the role of cytokines markers in discogenic pain through fMRI, neuroplastic changes within the CNS associated with MSK pain as well as effective identification of aberrant myofascial patterns and their contribution to bio-mechanical dysfunction.

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