MSK Solutions

Pain Recovery Program

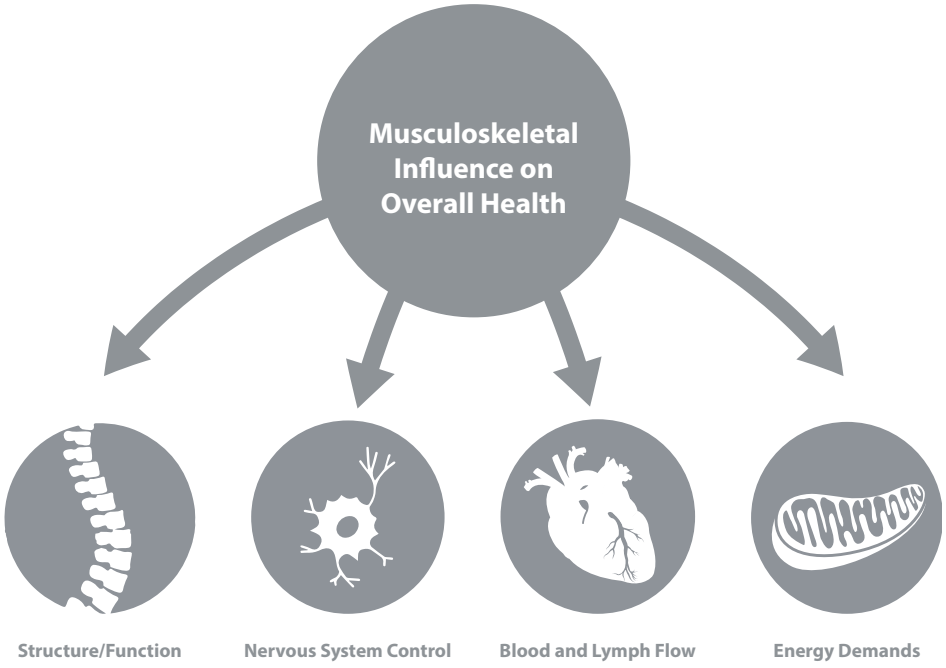
In-Practice Guide

Principles of Musculoskeletal Health

The Importance of the Musculoskeletal System in Health and Disease

The musculoskeletal system is more than the coat rack on which the other organ systems are held. The musculoskeletal system constitutes more than 60% of the human body, and provides valuable insight into the health and function of the other organ systems. Imbalances within the musculoskeletal system limit the body's ability to maintain homeostasis and recover from injury and disease.

Most clinicians understand the importance of the musculoskeletal system, but are unaware of the specific ways it integrates in whole-body health. Musculoskeletal pain and dysfunction can serve as an indicator of deeper health issues, warning patients of things to come if they continue down a path of poor lifestyle decisions. Pain and dysfunction can be a powerful motivator that can be used to help patients take immediate action.



1. **Structure/Function:** The musculoskeletal system makes up most of the human body, and variations within it influence all other systems.
2. **Nervous System Control:** All functions of the body are controlled by the nervous system, i.e., peripheral and central nervous systems (ANS: sympathetic and parasympathetic nervous system, vagus nerve, and influence of the endocrine glands).
3. **Blood and Lymph Flow:** Every cell in the body depends on nutrient delivery via arterial blood flow and metabolic waste removal via lymph and venous return from every tissue and organ. The removal of waste products is dependent on limb movement and proper diaphragm function.
4. **Energy Demands:** Efficiency of the musculoskeletal system is key to balancing energy demand in the body. Musculoskeletal dysfunction creates an increase in energy demand. The greater the activity of the musculoskeletal system, the greater the energy demand for the entire body.

Why Nutrition is Important to Musculoskeletal Health and Pain

Traditionally, injury and dysfunction of the musculoskeletal system has been treated primarily with physical modalities and pain medication. While physical restoration and decreasing pain are vital components to restoring musculoskeletal function, especially in an acute situation, application of a similar strategy to all musculoskeletal dysfunction and pain may limit the full regenerative capacity of the body over time. In fact, chronic nutrient depletion and biochemical pathway inhibition may lead to more pain and dysfunction within the body. Nutrients and lifestyle approaches have largely been overlooked as vital components in supporting the musculoskeletal system and decreasing pain.

Building Physiologic Resilience and Metabolic Reserve Can Help Prevent Pain and Dysfunction

The presence of harmful signals overwhelms tissue healing, and the absence of healthy signals that promote tissue recovery can result in both chronic physical and physiological dysfunction. The Lifestyle Synergy Model (The *Original Prescription*) is designed to optimize the protective and regenerative ability of all tissues and organs, and provide a better strategy for pain treatment.

Physiological resilience is the capacity of each cell or organ system to withstand the necessary (and immediate) changes creating the rhythm of a healthy organism. Each of these systems, and thousands more, are like rubber bands designed to be stretched for a physiological purpose, then snap back to their original status, ready for the next physiological challenge. Some systems are stretched and snap back in an instant, such as nerve conductivity, others in hours, like blood-glucose control. Some follow a circadian cycle, such as the HPA axis, and others a monthly cycle.

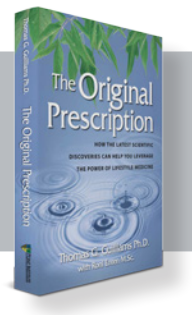
When inappropriate or overwhelming signals begin to overpower our physiological resilience, the stretching of that system does not immediately resolve. If physiological resilience defines the immediate capacity of cells, tissues, and organs systems to respond to changes in physiological need, metabolic reserve defines the long-term capacity of tissues and organ systems to withstand repeated (chronic) changes to physiological needs. It is the stored-up "reserve" available for each metabolic function of every cell and organ system to maintain and rebuild its physiological resilience. As with any reserve, its capacity is vulnerable to depletion, but also capable of being resupplied and strengthened.

While it is impossible to discuss every possible musculoskeletal disorder and the nutritional treatment and management of those disorders, this guide attempts to focus on commonly seen issues and complement traditional and alternative treatments to maximize the healing and recovery process while improving patient outcomes. We also understand that the body is interconnected, and pain can originate from multiple structures simultaneously. For ease of reference, we have segmented the main components of the musculoskeletal system. The segmentation may require combining certain disorders in different segments for comprehensive treatment. This guide isn't a replacement of diagnosis and management of the individual patient, but a complement to a diagnosis and an enhancement of patient management that can be quickly considered when developing a treatment plan. There is immense value in a guide that saves the physician treasured time and offers an easily implemented system that complements current care strategies.

One goal is to help clinicians to implement nutrition without changing their practice, running labs, practicing functional medicine, and doing nutrition consults. Having a repeatable system, with ready-made protocols offers that freedom because all the work on the front end is done for you. Simply assess, grade, fill in the protocol, and add the nutrition recommendations to your care plan. You can be efficient, specific and increase patient compliance.

Five main categories of musculoskeletal health will be covered in this guide: Nerve, Bone, Joint, Muscle and Connective Tissue. The format will provide Case Presentations with specific protocols for common patient types. Patient goals, strategies, and timeframes to consider are also included, and will be helpful in saving time when establishing treatment plans and protocols.

The MSK Solutions Pain Recovery Program sets you apart from your competition and positions you as the natural pain expert in your community. Join the mission to reduce opioid and excessive medication use in your community, and reduce the burden of pain and addiction.

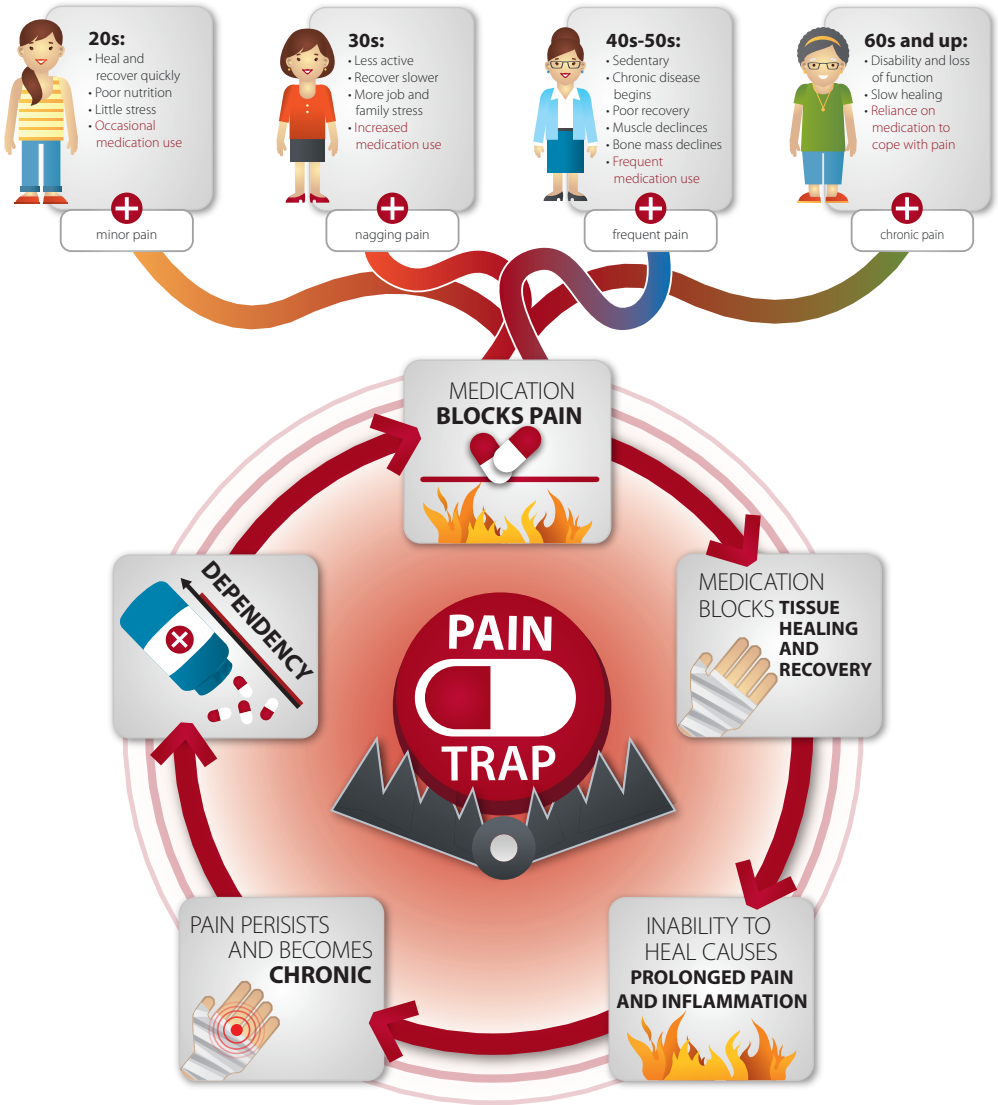


See *The Original Prescription* for more information on The Lifestyle Synergy Model and a useful educational resource to help patients understand how daily life choices impact their health.

Introduction to the MSK Solutions Pain Recovery Program

"No matter what I do, or don't do, I can't escape it. Even when I'm sleeping, or trying to fall asleep, part of my mind is aware of the pain that courses through my muscles, joints and spine. I can't find any relief. The worst part has been the mental anguish of knowing my life has forever changed. My once hopeful outlook had been replaced with constant pain, anxiety, and depression. My journey has also included a medical merry-go-round with doctors and treatments. To my surprise, there has been no quick fix, no clinician who fully understood my pain, and no single approach that could solve my problem. Here I am, years later, still in pain, and looking for something better."

If you're a health care professional who sees patients in pain, you've heard this story before—and you've been given 15 minutes to solve this patient's problem. You also recognize the complexity and difficulty of helping patients avoid a life of pain and dysfunction. The concept of the "Pain Trap" explains how easy it is to allow pain to become part of everyday life and get caught in a lifecycle of pain and dysfunction. The MSK Solutions Program helps your patients avoid this path and escape the Pain Trap quickly.



You know the current state of pain in the United States, and that quick solutions rarely work, especially for causes of chronic pain. According to the CDC, the musculoskeletal system, specifically low back pain (LBP), accounts for the largest contribution of lost wages, decreased quality of life and disability. The conventional approach to pain care in the US is broken, and there is no single therapy that will provide a solution. Currently, 75% of opioid misuse begins with prescription medication, and misuse is of epidemic proportions. Recently the FDA and the federal government have declared opioid misuse a national emergency, calling for more regulation and a push to incorporate alternative therapies.

The solution to chronic pain is a different approach. A way to offer hope to those in pain is to help them regain function as quickly as possible through a comprehensive intervention and prevention approach. Part of the solution requires shifting focus from symptom-centered to patient-centered, championing a new approach to the growing problem of pain and inflammation. The solution requires empowering patients to become less dependent on pain medication and a costly, broken system that ends in a cycle of perpetual, chronic pain or even worse, invasive surgery. The true solution allows patients to become independent as they learn to take control of their pain, incorporating lifestyle and nutritional strategies that accelerate healing and recovery. The MSK Solutions Program gives you everything you need to help identify, treat and guide patients to a quick recovery from painful conditions so you can transform the health of your community.

Our core philosophy is simple: The human body has an amazing ability to maintain its own health when provided with the right signals. When harmful signals are decreased, and appropriate signals are increased, cells and organ systems can create a healthy outcome and maximize the body's ability to decrease pain.

The MSK Solutions Program In-Practice Guide offers:

- **Simple system to transform the problem of pain in your community**
- **Nutrient solutions for acute and chronic pain issues**
- **Nutritional protocols for common musculoskeletal problems including joint, tendon and ligament**
- **Dietary and nutrient solutions for acute and chronic inflammation**
- **Easily recognizable case presentations and protocols for quick implementation**

Acetaminophen toxicity is a concern for the liver as well as the kidney, where the P450 enzymes metabolize acetaminophen's highly reactive metabolites. Large and repeated doses have been shown to produce hepatotoxicity, yet acetaminophen is still the most widely used and recommended nonprescription analgesic in the United States. One of the interesting findings of the use of aspirin, NSAIDs, and steroid drugs for OA is their effect on articular cartilage metabolism. NSAIDs have been shown to suppress proteoglycan synthesis by chondrocytes. Aspirin has been shown to block an enzyme involved in elongation of chondroitin sulfate molecules. It seems that the very drugs used to mask the pain caused by articular cartilage loss may be preventing the joints from effectively replacing it.

- See **Appendix A: Anti-Inflammatory Diet**

Case Presentation: Degenerative Joint Disease (DJD)/Osteoarthritis (OA)

A 48-year-old male presents with a five-year history of morning stiffness in his right knee and right hip that he rates at 4-6/10. He is a carpenter by trade and spends a lot of time bending, lifting and twisting during his 12-hour days. He has joint tenderness that improves after being on his feet for a few hours, intermittent inflammation, and joint crepitus. He walks with a mild limp, and has 20 to 30% loss of right knee flexion compared to the right. His hip ROM is within normal ranges bilaterally, but gets a mild pinch in his groin area with internal rotation. Radiographs of the knees and pelvis show a narrowing in the joint space in the right knee compared to the left, decreased disc height of the L5/S1 disc, and osteophyte formation on the inferior portion of the acetabulum. He would like to stay active and decrease his pain as much as possible for his job, but also to play with his three daughters who are all ages seven or younger.

Clinical Pearl

Common joints include areas of the spine referred to as transitional segments at C5-C7, T2-T5, T10-T12, L4-S1 with additional involvement of uncovertebral, costovertebral, discovertebral, and apophyseal (facet) joint involvement. Range from asymptomatic to severely symptomatic with pain and stiffness. Radiographic to clinical correlation is poor. May contribute to IVF narrowing and spinal stenosis. Common radiographic findings include disc space narrowing, hypertrophy of smaller joints such as facets and costovertebral, synovial cysts, Schmorl's nodes, and intradiscal vacuum phenomena. In middle stages, joint and capsular laxity may lead to subluxation and listhesis. Management in early and middle stages include strengthening of the spinal muscles with a focus on abdominal strengthening and extensor strengthening and stretching. The tree-joint complex model stresses the need to consider the interrelationship of facets joint and intervertebral disc joints in the progression of DJD of the spine. Maintenance of normal joint motion and function may be facilitated by adjusting or manipulation or mobilization. Dietary approaches include an anti-inflammatory dietary regimen and use of glucosamine and chondroitin sulfate. Medical management may include recommendations for NSAIDs and COX-2 inhibitors for pain management.

Goals

Acute	Subacute	Prevention/Wellness
1. Relieve pain	1. Promote collagen healing and protection (anti-inflammatory and antioxidant support)	1. Prevent further progression
2. Decrease inflammation and edema	2. Increase pain-free ROM	
	3. Rehab and restore function	
	4. Restore normal strength and stability to joint structure	

Protocol

Acute		
Pain, Inflammation and Edema (2-4 weeks)		
Nutrient	**Dosing**	**Duration**
Proteolytic enzymes (trypsin, chymotrypsin, bromelain)	3-4 tablets QID	10-14 days
Bioflavonoids (quercetin, hesperidin, rutin)	200 mg mixed bioflavonoids q2h	10-14 days
Herbal (turmeric, boswellia, ginger, cayenne)	500 mg QID, 400 mg QID, 200 mg, 50 mg	10-14 days
Omega-3s	1,600 mg TID	14-21 days
Acetyl L-carnitine	1,000 mg TID (diabetic neuropathy)	45-90 days
Alpha lipoic acid	600 mg TID (diabetic neuropathy)	45-90 days

Acute		
Moderate to Severe Muscle Spasm and Tension		
Nutrient	**Dosing**	**Duration**
Magnesium	200 mg TID	10-14 days
GABA	250 mg TID	10-14 days
Glycine	225 mg TID	10-14 days
Cramp Bark	200 mg TID	10-14 days
Dong Quai Root Extract	150 mg TID	10-14 days

Subacute		
Mild to Moderate Pain Relief, Mild Inflammation Reduction, Cartilage and Disc Healing		
Nutrient	**Dosing**	**Duration**
Hydrolysated Collagen Type II and I	5-10 g per day (hydrolysated collagen type II (subacute disc and facet injury)	90 days
Collagen Type I	500 mg Type I collagen (subacute disc injury: annulus fibrosus)	90 days
Hyaluronic acid	80 mg per day	90 days
Glucosamine	500 mg TID	90 days for chronic OA/DJD/DDD
Chondroitin	300-400 mg TID	90 days for chronic OA/DJD/DDD
MSM	900 mg TID	90 days for mild pain, inflammation, and joint stiffness
Omega-3s	1,600 mg BID	14 days tapering to 800 mg PRN for low-grade inflammation
Turmeric	500 mg BID	14 days tapering to 500 mg PRN for low-grade inflammation

Prevention/Wellness		
Nutrient	**Dosing**	**Duration**
Omega-3s	1 g QD	Ongoing
Hydrolysated Collagen Type II	5 g QD	Ongoing
MSM	2,700 mg QD or 500 mg in combined product QD	Ongoing
Magnesium	300-400 mg QD	Ongoing

Case Presentation: Degenerative Disc Disease (DDD)

A 54-year-old male presents after feeling a "pop" in his low back while lifting a heavy object. Four weeks later he continues to have significant low back pain, with no complaints of symptoms in his leg. Currently he rates his back pain at 3-8/10, that comes and goes. He works as a firefighter and was a general contractor prior to his firefighting career. The pain is mainly in his lower lumbar and left hip area. He describes the pain as a dull ache, and feels very stiff in the morning. Standing up first thing in the morning will occasionally send a "shock" down the back of his left leg. If he lies back down the pain subsides. He denies constant radiating pain into his legs and says that if he stretches first thing in the morning it seems to loosen up. He also tends to feel better when he walks, or jogs compared to sitting. Most recently he was bagging leaves from raking his front yard and found that his pain became severe from being bent forward and twisting. He has found the ibuprofen helps decrease the pain, but doesn't take it away. He is also concerned about having to take medication long-term to deal with the pain and wants to know what he can take in conjunction with his chiropractic care. Radiographic findings reveal IVF narrowing at the right L5/S1, disc space narrowing, hypertrophy facets and costovertebral, synovial cysts, Schmorl's nodes, and intradiscal vacuum phenomena. Physical exam is unremarkable from a neurologic standpoint, but does have muscle tension and tenderness in the lumbosacral paraspinals bilaterally. Provocative tests are negative for nerve root impingement.

Lifestyle Matrix
RESOURCE CENTER

LifestyleMatrix.com

LT-MSK-006-A 02092018