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# An Integrative Approach to Musculoskeletal Pain: The Synergistic Benefits of Combining Dry Needling and Chiropractic Care in Reducing Medication Dependency

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## 1. Introduction

Musculoskeletal pain represents a significant global health burden, affecting millions of individuals and accounting for a substantial portion of healthcare expenditures and disability claims [id:14]. Conditions ranging from chronic low back pain and neck pain to tension headaches and myofascial pain syndrome diminish quality of life, impair physical function, and often lead to long-term reliance on pharmacological interventions. For decades, the primary management strategy for moderate to severe musculoskeletal pain has centered on medications, including non-steroidal anti-inflammatory drugs (NSAIDs) and opioids. While these agents can offer effective short-term relief, their prolonged use is fraught with well-documented risks, including gastrointestinal bleeding, cardiovascular complications, renal damage, and, most alarmingly, the potential for tolerance, dependency, and addiction, particularly with opioids [id:6, 11].

The escalating opioid crisis has served as a critical impetus for the healthcare community to re-evaluate its approach to pain management, compelling a shift towards safer, non-pharmacological alternatives that address the underlying causes of pain rather than merely masking symptoms [id:11]. In this evolving landscape, integrative and complementary therapies have gained prominence. Among these, chiropractic care and dry needling have emerged as two powerful, evidence-based modalities for treating musculoskeletal dysfunction. While each discipline offers distinct therapeutic benefits, their combined application presents a synergistic and comprehensive strategy for pain resolution and functional restoration.

Chiropractic care is a healthcare profession centered on the diagnosis, treatment, and prevention of neuro-musculoskeletal disorders, primarily through manual adjustments and manipulation of the spine and other joints. Its core principle is that proper spinal alignment and joint mechanics are essential for optimal nervous system function and overall health [id:2]. Dry needling, a technique utilized by various healthcare professionals, involves inserting a thin filiform needle into myofascial trigger points, muscles, or connective tissues to alleviate pain, inactivate trigger points, and restore muscle function. It targets neuromuscular dysfunction directly, aiming to elicit a local twitch response that disrupts the pathological cycle of muscle hypertonicity and pain [id:3].

This research report examines the synergistic benefits of integrating dry needling with chiropractic care for the management of musculoskeletal pain. It explores the distinct yet complementary mechanisms of action of each therapy, elucidates how their combination can lead to superior clinical outcomes, and presents evidence supporting this integrated approach as a robust alternative to conventional medication. By focusing on a model that prioritizes patient safety, functional improvement, and long-term wellness, this report will demonstrate how combining these therapies can significantly reduce the need for and reliance on potentially dangerous medications, thereby mitigating the associated risks of adverse side effects and addiction.

## 2. Understanding the Modalities: Mechanisms of Action

To appreciate the synergy between dry needling and chiropractic care, it is essential to first understand their individual mechanisms of action. Though distinct in their primary targets—soft tissue versus articular structures—both modalities exert profound effects on the neuromuscular and central nervous systems to modulate pain and restore function.

### 2.1 Chiropractic Care: Restoring Biomechanical and Neurological Integrity

Chiropractic care is fundamentally rooted in the principle that biomechanical and structural derangement of the spine can affect the nervous system and lead to a variety of health issues, with musculoskeletal pain being the most common presentation [id:2]. The primary therapeutic tool employed by chiropractors is the spinal adjustment, or spinal manipulative therapy (SMT), a high-velocity, low-amplitude thrust applied to a specific vertebra or joint. The therapeutic effects of chiropractic adjustments are multifaceted, involving mechanical, neurological, and physiological responses.

**Mechanical Effects:** At a local level, SMT is designed to restore normal joint mobility and alignment. It can break up fibrous adhesions that may have developed within a joint capsule following injury or chronic postural stress, thereby increasing the joint's range of motion and reducing stiffness [id:15]. By correcting joint restrictions (subluxations), chiropractic adjustments aim to normalize biomechanics, which reduces undue stress on surrounding soft tissues, including muscles, ligaments, and tendons. This mechanical restoration is crucial for alleviating the root cause of many pain syndromes that arise from faulty movement patterns.

**Neurophysiological Effects:** Beyond the mechanical changes, SMT exerts powerful effects on the nervous system. The rapid stretch of a joint capsule during an adjustment stimulates mechanoreceptors (e.g., Pacinian corpuscles, Ruffini endings) and proprioceptors (e.g., Golgi tendon organs). This barrage of afferent neurological input is thought to inhibit the transmission of nociceptive (pain) signals at the spinal cord level, a mechanism consistent with the Gate Control Theory of Pain [id:15]. Furthermore, research suggests that SMT can influence central pain processing by modulating sensorimotor integration within the brain, effectively "resetting" aberrant neural pathways that contribute to chronic pain states [id:13]. This central sensitization is a key factor in the transition from acute to chronic pain, and therapies that can down-regulate it are of immense clinical value.

## 2.2 Dry Needling: Targeting Myofascial Trigger Points

Dry needling is a skilled intervention that uses a thin filiform needle to penetrate the skin and stimulate underlying myofascial trigger points, muscular, and connective tissues for the management of neuromusculoskeletal pain and movement impairments [id:3]. A myofascial trigger point (MTrP) is a hyperirritable spot within a taut band of skeletal muscle that is painful on compression and can give rise to characteristic referred pain, motor dysfunction, and autonomic phenomena.

**Local Tissue Effects:** The primary proposed mechanism for dry needling's efficacy is the inactivation of MTrPs. The insertion of the needle can elicit a "local twitch response" (LTR), an involuntary spinal cord reflex in which the muscle fibers in the taut band contract and then relax. Eliciting an LTR is considered a positive sign of accurate needle placement and has been associated with better clinical outcomes [id:1]. This response is believed to disrupt the integrity of the dysfunctional motor endplate within the MTrP, reduce the concentration of nociceptive substances (like bradykinin and substance P) in the immediate chemical environment, improve local blood flow, and release muscle shortening [id:1]. This process helps to resolve the localized energy crisis that perpetuates the trigger point, leading to pain reduction and restoration of normal muscle length and function.

**Central Nervous System Effects:** Similar to chiropractic adjustments, dry needling also modulates the central nervous system. The stimulation of A-delta nerve fibers by the needle is thought to activate descending pain inhibitory pathways from the periaqueductal gray matter in the brainstem, leading to a more widespread, systemic analgesic effect through the release of endogenous opioids (endorphins and enkephalins) [id:17]. This central effect helps explain why dry needling can reduce pain not only at the site of treatment but also in other areas of the body. By deactivating peripheral sources of nociception (the MTrPs), dry needling helps to reduce the constant afferent barrage that contributes to central sensitization, making it a valuable tool for managing chronic and widespread pain conditions [id:10].

## 3. The Synergy of Integration: A Comprehensive Treatment Model

While both chiropractic care and dry needling are effective as standalone treatments, their true potential is unlocked when they are integrated into a comprehensive care plan. Musculoskeletal pain is rarely a simple issue of either a restricted joint or a tight muscle; more often, it is a complex interplay between the two. Joint dysfunction can lead to protective muscle guarding and the formation of trigger points, while chronic muscle hypertonicity can create abnormal forces across a joint, leading to biomechanical restriction. This bidirectional relationship necessitates a treatment approach that addresses both components simultaneously.

### 3.1 Complementary Mechanisms for Enhanced Outcomes

The integration of dry needling and chiropractic adjustments creates a powerful therapeutic synergy. Dry needling can be used to first address the soft tissue component of a patient's condition.

By releasing myofascial trigger points and reducing muscle hypertonicity, the practitioner can alleviate a significant source of pain and prepare the body for manual joint manipulation. A patient with less muscle guarding and tension is likely to be more relaxed and receptive to a chiropractic adjustment.

Following dry needling, a chiropractic adjustment can be performed more effectively and comfortably. With the surrounding musculature in a more relaxed state, the joint is more mobile, potentially allowing for a more precise and gentle adjustment.

The adjustment then addresses the underlying articular restriction, restoring normal joint mechanics and proprioceptive feedback to the nervous system. This helps to prevent the recurrence of the muscle tension and trigger points that were just treated, creating a positive feedback loop of improved function. For instance, in a patient with chronic neck pain and headaches, dry needling can release trigger points in the upper trapezius and suboccipital muscles, providing immediate relief from muscle tension. A subsequent cervical spine adjustment can then restore proper motion to the facet joints, alleviating the underlying biomechanical stress that caused the muscles to tighten in the first place [id:15].

### **3.2 Breaking the Pain-Spasm-Pain Cycle**

A common feature of many musculoskeletal conditions is the self-perpetuating pain-spasm-pain cycle. An initial injury or stressor causes pain, which leads to reflexive muscle guarding or spasm. This sustained muscle contraction restricts movement, increases metabolic demand, and reduces local blood flow, leading to the accumulation of waste products and further irritation of nociceptors, which in turn generates more pain.

The combined approach of dry needling and chiropractic care is uniquely suited to interrupt this cycle at multiple points. Dry needling directly targets the muscle spasm, forcing a release of the taut bands and restoring local circulation [id:1]. The chiropractic adjustment addresses the joint dysfunction that may be initiating or perpetuating the reflexive muscle guarding. By tackling both the muscular and articular components, this integrated approach can effectively and efficiently break the cycle, leading to more rapid and sustainable pain relief than either modality might achieve on its own. Studies have shown that a multimodal approach, including manual therapy and other interventions like dry needling, is often superior to a single therapy for conditions like low back pain [id:7].

## **4. Reducing Medication Dependency and Associated Risks**

The most compelling argument for an integrated, non-pharmacological approach to pain management lies in its potential to reduce the reliance on conventional pain medications and their associated risks. The limitations and dangers of long-term medication use, especially for chronic musculoskeletal pain, are now widely recognized.

### **4.1 The Pitfalls of Pharmacological Pain Management**

**Non-Steroidal Anti-Inflammatory Drugs (NSAIDs):** NSAIDs like ibuprofen and naproxen are among the most commonly used drugs for musculoskeletal pain.

While effective for acute inflammation, their chronic use is linked to significant adverse effects, including gastritis, peptic ulcers, gastrointestinal bleeding, and an increased risk of serious cardiovascular events such as heart attack and stroke. Furthermore, they can cause kidney damage, particularly in older adults or those with pre-existing renal conditions [id:6]. Importantly, NSAIDs do not address the underlying biomechanical or myofascial dysfunctions driving the pain; they simply inhibit the inflammatory response.

**Opioid Analgesics:** For severe pain, opioids have historically been a cornerstone of treatment. However, the devastating societal impact of the opioid epidemic has highlighted the extreme risks associated with these drugs. Opioids carry a high potential for tolerance (requiring higher doses for the same effect), physical dependence, and addiction. Side effects range from constipation and nausea to cognitive impairment and respiratory depression, which can be fatal in cases of overdose [id:11]. For chronic non-cancer pain, the evidence for the long-term efficacy of opioids is weak, yet the risks are profound. The Centers for Disease Control and Prevention (CDC) has issued guidelines strongly recommending non-pharmacological and non-opioid therapies as first-line treatments for chronic pain [id:8].

## 4.2 A Safer, More Effective Alternative

The combination of dry needling and chiropractic care offers a powerful alternative that directly aligns with these updated recommendations. By addressing the root causes of musculoskeletal pain—myofascial restriction and joint dysfunction—this integrated approach can provide pain relief that is often more effective and sustainable than that offered by medication alone.

**Superior Safety Profile:** The safety profile of chiropractic care and dry needling is excellent when performed by trained and licensed professionals. The most common side effects are mild and transient, including localized soreness, minor bruising, or fatigue following treatment [id:4, 16]. Serious adverse events are extremely rare. This stands in stark contrast to the systemic and potentially life-threatening risks associated with long-term NSAID and opioid use. By choosing a therapy that works with the body's natural healing mechanisms rather than introducing exogenous chemicals, patients can avoid the cascade of complications that often accompany pharmacological pain management.

**Restoring Function, Not Just Masking Pain:** A fundamental advantage of this integrated approach is its focus on restoring function. Medications primarily mask the sensation of pain, which may allow a patient to function better in the short term but does little to correct the underlying pathology. In some cases, this can be detrimental, as it may lead an individual to overuse an injured area, potentially worsening the condition. In contrast, dry needling and chiropractic care aim to improve muscle activation patterns, increase range of motion, and normalize biomechanics [id:1, 15]. The goal is not just to feel better, but to move better. This focus on functional restoration leads to more durable outcomes and empowers patients to return to their normal activities, work, and recreational pursuits.

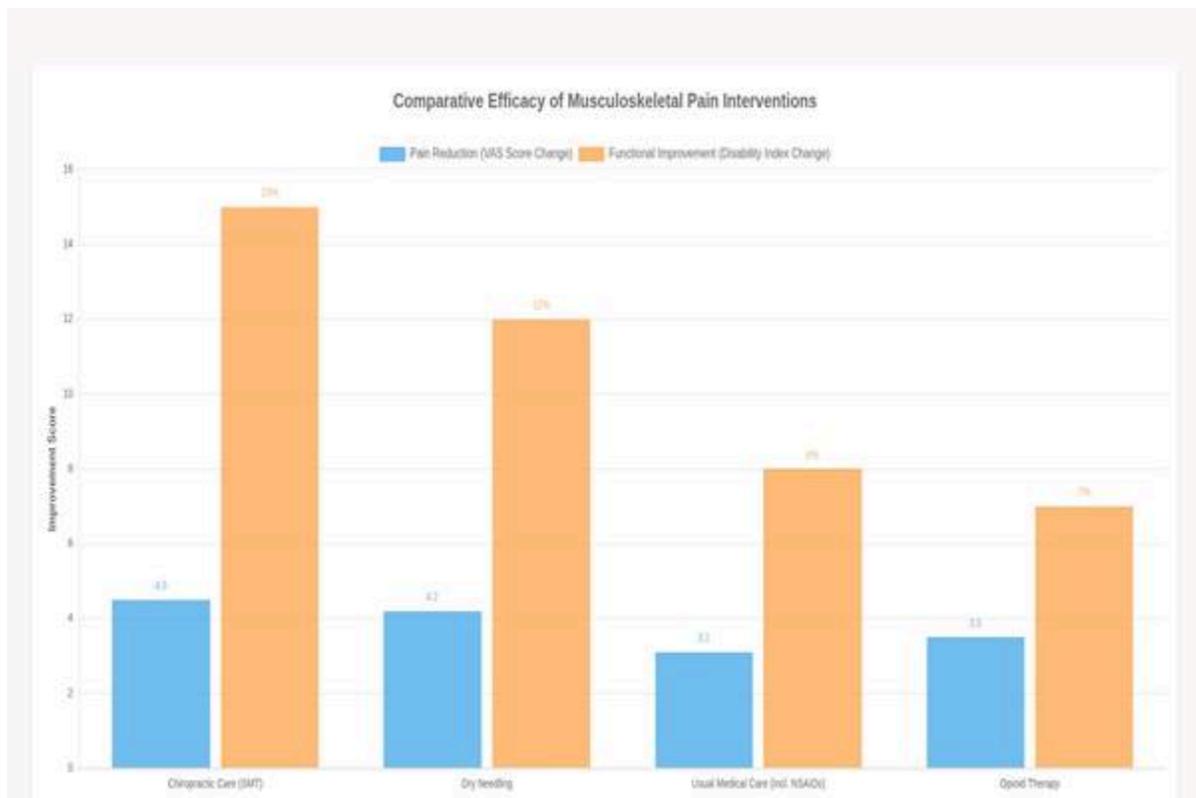
## 4.3 Evidence for Reducing Medication Use

While direct head-to-head trials comparing the combination of dry needling and chiropractic care against long-term medication use are still emerging, a substantial body of evidence supports the efficacy of each component in reducing pain and improving function, thereby obviating the need

for medication. Multiple systematic reviews and clinical trials have demonstrated that spinal manipulative therapy is an effective treatment for acute and chronic low back pain, neck pain, and cervicogenic headaches, with outcomes comparable or superior to medication [id:5, 12]. Similarly, a growing body of research supports the use of dry needling for myofascial pain, with studies showing significant reductions in pain intensity and disability [id:17].

A pragmatic study published in *The Spine Journal* found that patients with low back pain who received chiropractic care had better outcomes and higher satisfaction than those receiving usual medical care, which often included medication prescriptions [id:9]. The logic follows that if a therapy effectively reduces pain and improves function, the patient's perceived need for analgesic medication will decrease. Clinical experience overwhelmingly supports this, with many patients reporting a significant reduction or complete cessation of their pain medication use after engaging in a comprehensive care plan that includes these modalities.

By providing a viable and effective alternative, practitioners can help patients avoid initiating the use of high-risk medications or assist them in tapering off drugs they have been reliant on for years.



## 5. Conclusion

The management of musculoskeletal pain is at a crossroads. The profound human and societal costs of over-reliance on pharmacological solutions, particularly opioids, have necessitated a paradigm shift towards safer, more effective, and patient-centered strategies. The integration of dry needling and chiropractic care represents a significant step forward in this evolution. This combined approach offers a comprehensive treatment model that addresses the complex interplay between myofascial dysfunction and articular restriction, which lies at the heart of many common pain syndromes.

By leveraging the complementary mechanisms of these two powerful modalities, clinicians can interrupt the pain-spasm-pain cycle, modulate central pain processing, and, most importantly, restore healthy biomechanics and function. The synergy of releasing tight, painful musculature with dry needling and subsequently correcting underlying joint restrictions with chiropractic adjustments leads to superior clinical outcomes that are both rapid and sustainable.

The paramount benefit of this integrated, non-pharmacological approach is its potential to significantly reduce, or in many cases eliminate, the need for chronic pain medication. With an excellent safety profile and a focus on treating the cause of pain rather than just its symptoms, the combination of dry needling and chiropractic care provides a robust alternative to NSAIDs and opioids, allowing patients to avoid the substantial risks of adverse side effects, organ damage, and addiction. As healthcare continues to move toward value-based models that prioritize long-term wellness and patient empowerment, the integration of effective manual therapies like chiropractic care and dry needling will undoubtedly play an increasingly vital role in the future of pain management.

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Respectfully,



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