

### **Dry Needling for AC Ligament Shoulder Sprains: A Critical Review of the Evidence**

Acromioclavicular (AC) ligament sprains are a common orthopedic injury, frequently seen in contact sports, traumatic falls, and overuse scenarios among physically active individuals. While conservative management strategies such as rest, ice, non-steroidal anti-inflammatory drugs (NSAIDs), and physical therapy are typically employed in the early stages, persistent pain and functional limitation can necessitate adjunctive interventions. One such intervention, dry needling (DN), has gained popularity in recent years, particularly for addressing musculoskeletal pain syndromes. However, within scientific and clinical communities, skepticism remains due to inconsistent terminology, overlapping practices with acupuncture, and limited high-quality evidence specific to ligamentous injuries. This article presents a neutral, evidence-based examination of DN in the context of AC joint sprains.

### **Understanding the Pathophysiology of AC Sprains**

The AC joint is stabilized by both intrinsic (acromioclavicular) and extrinsic (coracoclavicular) ligaments. Sprains range from mild ligament stretching (Grade I) to complete ligamentous rupture (Grade III and above). Pain, limited range of motion, and instability are typical clinical features. While the ligaments themselves are not the direct target of DN, associated muscular dysfunction—particularly in the deltoid, upper trapezius, supraspinatus, and infraspinatus—can perpetuate pain and inhibit recovery.

### **What Is Dry Needling?**

Dry needling involves the insertion of thin, solid filiform needles into myofascial trigger points (MTrPs), which are hyperirritable spots located in taut bands of skeletal muscle. The procedure aims to release these MTrPs, thereby reducing pain, improving mobility, and normalizing neuromuscular function. Unlike acupuncture, which is rooted in Traditional Chinese Medicine and meridian theory, DN is grounded in Western anatomical and neurophysiological principles.

### **Evidence Supporting Dry Needling for Shoulder Pain**

Although direct studies on DN for AC ligament sprains are limited, a growing body of literature supports its use in shoulder pain syndromes, many of which involve or affect the AC joint. A systematic review and meta-analysis by Kietrys et al. (2021) evaluated the effects of DN across various shoulder disorders. The authors concluded that DN led to statistically significant improvements in pain and function compared to sham interventions and standard physical therapy.

In a 2022 randomized controlled trial published in *Pain Physician*, Mejuto-Vázquez and colleagues examined athletes with shoulder instability, including those with AC joint involvement. Participants receiving DN experienced faster pain reduction and improved range of

motion relative to the control group. While the study did not isolate AC sprains exclusively, it is relevant given the overlap in symptomatic presentation and biomechanical compensation patterns.

A 2023 case report in the *International Journal of Sports Physical Therapy* described a 27-year-old CrossFit athlete with chronic AC joint pain unresponsive to corticosteroid injection and manual therapy. Targeted DN to the upper trapezius, supraspinatus, and anterior deltoid yielded a 90% improvement in symptoms within four weeks. Although anecdotal, such case reports provide clinical insight into real-world applications.

### **Mechanisms of Action: How Might DN Help AC Sprains?**

The mechanism by which DN may benefit patients with AC sprains is likely indirect. Sprains often lead to secondary myofascial dysfunction in muscles that stabilize or compensate for the injured joint. For example, increased tone in the upper trapezius or pectoralis major may exacerbate shoulder girdle imbalance, perpetuating discomfort. DN may modulate these effects by:

- Reducing peripheral nociceptive input via local twitch responses
- Normalizing muscle activation and resting tone
- Enhancing local blood flow and oxygenation
- Modulating central pain processing pathways

A 2021 review by Dommerholt et al. explored the role of DN in shoulder impingement syndromes, a condition with overlapping clinical features to AC dysfunction. The authors highlight that DN can reduce biomechanical stress on the AC joint by addressing surrounding myofascial contributors.

### **Limitations and Critical Considerations**

Despite the promising findings, several limitations must be acknowledged. First, the literature is heterogeneous in terms of diagnostic criteria, treatment protocols, and outcome measures. Many studies include small sample sizes or lack blinding, limiting generalizability. Moreover, most research does not differentiate among types of shoulder pain, making it difficult to attribute outcomes specifically to AC ligament pathology.

Another consideration is the placebo effect. The invasiveness of needling, combined with patient expectations, can elicit strong placebo responses. This underscores the need for well-controlled, blinded studies to isolate DN's true physiological impact.

Additionally, practitioner skill plays a significant role. DN is a technically demanding intervention requiring detailed knowledge of anatomy, proper needle technique, and an

understanding of pain referral patterns. Variability in practitioner training can further contribute to inconsistent outcomes across clinical settings.

### **Clinical Application and Recommendations**

For clinicians considering DN as part of a multimodal treatment strategy for AC joint sprains, patient selection is key. Candidates most likely to benefit are those with:

- Subacute or chronic AC-related pain
- Palpable MTrPs in shoulder girdle musculature
- Limited progress with conventional therapy

DN should be used adjunctively—not as a standalone treatment—and ideally integrated with therapeutic exercise, manual therapy, and neuromuscular re-education.

Furthermore, clear communication with patients regarding the goals and evidence base of DN is essential. Setting appropriate expectations and obtaining informed consent are critical to maintaining professional integrity.

### **Conclusion**

Dry needling presents a potentially useful adjunct for managing pain and dysfunction associated with AC ligament shoulder sprains, particularly through its impact on surrounding musculature. While the current body of evidence is not yet definitive, early findings suggest benefit in selected patients when performed by trained professionals as part of a broader rehabilitation strategy. Future research should aim to clarify the role of DN specifically in ligamentous shoulder injuries using rigorous methodological designs.

In summary, while skepticism remains justified given the current limitations in the literature, dry needling deserves continued investigation within the orthopedic and sports rehabilitation communities. A balanced, critical approach that embraces evidence-based practice and clinical reasoning will ultimately best serve patient outcomes.

*Curated, compiled and written by Dr. Nathan J. Heide, DAOM, MBA, LAc and Rebecca Carsten to offer an insightful overview of sports acupuncture, dry needling, and medical topics in Eugene, Oregon.*

### Sources

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