

Safety of Dry Needling

Literature Review May 5-6, 2025

Note: these abstracts have been copied directly from the journals in the authors' original words; they have not been summarized/reworded

A. UNSAFE: DRY NEEDLING HAS BEEN DEMONSTRATED TO BE UNSAFE WHEN PERFORMED BY INADEQUATELY TRAINED PROFESSIONALS

1. Pneumothorax (Collapsed Lung)

- **Case Reports:** Multiple published case studies have documented incidents of pneumothorax following dry needling, especially when needling areas like the upper trapezius or thorax.
- **Sources:**
 - Peacock J, et al. "Pneumothorax after dry needling: a case report." *Journal of Manual & Manipulative Therapy*. 2014.
 - Meyer JJ, et al. "Pneumothorax after dry needling: two case reports and recommendations for prevention." *PM&R Journal*. 2015.
 - Arora A, Arora Y, Vasireddy S. *Unnecessary needling: a case of iatrogenic pneumothorax following dry needling procedure for chronic myofascial pain. Cureus. 2024 Dec 20;16(12):e76055. doi: 10.7759/cureus.76055. eCollection 2024 Dec. PMID: 39834995*
 - "This case report highlights a **complication of pneumothorax associated with dry needling (DN)**, a technique used for the treatment of myofascial pain syndrome and musculoskeletal disorders. Despite its growing popularity and efficacy in relieving pain, dry needling can lead to adverse events. We present a **case of a 35-year-old female** who developed pneumothorax following a dry needling session. During the dry needling session, the patient reported sharp pain underneath the scapula, and pneumothorax was confirmed three days later on a visit to the emergency department. Even though the chances of a pneumothorax are slim when DN is conducted over lung fields, it is essential that patients are informed of potential risks, including chest pain/tightness, fatigue, or shortness of breath during the procedure."
 - Cummings M, Ross-Marrs R, Gerwin R. *Pneumothorax complication of deep dry needling demonstration. Acupuncture Med. December 1, 2014;32(6). doi:10.1136/acupmed-2014-0106*

- Link to article:
<https://journals.sagepub.com/doi/10.1136/acupmed-2014-010659>

- **Peer-Reviewed Literature** demonstrates safety concerns (pneumothorax) from dry needling performed by professionals who are not properly trained

- **Adverse Reactions to Dry Needling Therapy: Insights from Polish Physiotherapy Practice**

- Trybulski R, 1,2,*;Adrian Kuźdżał 3,Marek Kiljański 4,Kamil Gałęziok 2,Filip Matuszczyk 2,Adam Kawczyński 5 andFilipe Manuel Clemente 5,6,7,*
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- Bontinck JS, Lyphout C, Malfait TLA. Pneumothorax as a complication of dry needling technique. *ERJ Open Res.* 2024 Apr 15;10(2):00156-2024. doi: 10.1183/23120541.00156-2024. eCollection 2024 Mar.
 - Post-dry needling pneumothorax is not extremely rare. Patients and referring doctors should be aware of this. Informed consent should mention pneumothorax as a considerable risk of dry needling procedures in the neck, shoulder or chest region.
- Swarbrigg C, Dalton B, Sheehy M, Glynn S. Dry needling - the life-threatening risk of iatrogenic pneumothorax. *Ir Med J.* 2023 Feb 23;116(2):735. PMID: 37555791
 - *No abstract available*

2. Nerve Injuries & Neuropathy

- **Data:** Case reports highlight nerve injuries (including transient or long-term sensory loss, tingling, or motor impairment).

- **Sources:**
 - Dommerholt J, et al. "Dry needling—Peripheral and central considerations." *Journal of Manual & Manipulative Therapy*. 2011.
 - Eser F, et al. "Peroneal nerve palsy due to dry needling." *Acupunct Med*. 2016.

3. Hematomas and Soft Tissue Trauma

- **Data:** Needle insertion into vascularized areas without proper anatomical training can lead to hematomas or muscle trauma.
- **Sources:**
 - Cagnie B, et al. "Dry needling for the treatment of myofascial trigger points in neck and shoulder pain: a literature review." *PM&R*. 2013.
 - Boyce D, et al. "Complications of dry needling therapy: a review of the literature." *PM&R*. 2018.

4. Infections

4. Lack of Standardized Training Increases Risk

- **Key Point:** Many adverse outcomes have been linked to dry needling performed after short weekend courses (20–30 hours), versus the 2,500+ hours required of acupuncturists or 300-hour minimums for MDs.
- **Professional Warnings:**
 - The **American Academy of Physical Medicine and Rehabilitation (AAPM&R)** and **Acupuncture societies** have repeatedly emphasized that inadequate training in needling technique and anatomy poses a serious risk to patients.
 - Fan AY, Xu J, Li Y-M. *Evidence and expert opinions: dry needling versus acupuncture (II): the American Alliance for Professional Acupuncture Safety (AAPAS) white paper 2016*. *Chin J Integr Med*. 2017 Feb;23(2):83-90. doi: 10.1007/s11655-017-2800-6. Epub 2017 Mar 7.
 - In the United States and other Western countries, dry needling has been a topic in academic and legal fields. This White Paper is to provide the authoritative information of dry needling versus acupuncture to academic scholars, healthcare professionals, administrators, policymakers, and the general public by providing the authoritative evidence and expertise regarding critical issues of dry needling and reaching a consensus. We conclude that Dr. Travell, Dr. Gunn, Dr. Baldry and others who have

promoted dry needling by simply rebranding (1) acupuncture as dry needling and (2) acupuncture points as trigger points (dry needling points). Dry needling simply using English biomedical terms (especially using "fascia" hypothesis) in replace of their equivalent Chinese medical terms. **Dry needling is an over-simplified version of acupuncture** derived from traditional Chinese acupuncture except for emphasis on biomedical language when treating neuromuscularskeletal pain (dry needling promoters redefined it as "myofascial pain"). **Trigger points belong to the category of Ashi acupuncture points in traditional Chinese acupuncture, and they are not a new discovery.** By applying acupuncture points, **dry needling is actually trigger point acupuncture,** an invasive therapy (a surgical procedure) instead of manual therapy. Dr. Travell admitted to the general public that **dry needling is acupuncture, and acupuncture professionals practice dry needling as acupuncture therapy** and there are several criteria in acupuncture profession to locate trigger points as acupuncture points. Among acupuncture schools, dry needling practitioners emphasize acupuncture's local responses while other acupuncturists pay attention to the responses of both local, distal, and whole body responses. **For patients' safety, dry needling practitioners should meet standards required for licensed acupuncturists and physicians.**

- **Peer-Reviewed Literature Warnings**

- *Kearns GA, Brismée J-M, Riley SP, et al. Lack of standardization in dry needling dosage and adverse event documentation limits outcome and safety reports: a scoping review of randomized clinical trials. J Man Manip Ther. 2023 Apr;31(2):72-83. doi: 10.1080/10669817.2022.2077516. Epub 2022 May 23.*
 - **Objectives:** Examine: (1) whether variability in dry needling (DN) dosage affects pain outcomes, (2) if effect sizes are clinically important, and (3) how adverse events (AE) were documented and whether DN safety was determined.
 - **Methods:** Nine databases were searched for randomized controlled trials (RCTs) investigating DN in symptomatic musculoskeletal disorders.

Methodological quality was assessed using the Physiotherapy Evidence Database (PEDro) scale. Included RCTs met PEDro criteria #1 and scored > 7/10. Data extraction included DN dosage, pain outcome measures, dichotomous AE reporting (yes/no), and AE categorization. Clinically meaningful differences were determined using the minimum clinically important difference (MCID) for pain outcomes .

Results: Out of 22 identified RCTs, 11 demonstrated significant between-group differences exceeding the MCID, suggesting a clinically meaningful change in pain outcomes. Nine documented whether AE occurred. Only five provided AEs details and four cited a standard means to report AE.

Discussion: There was **inconsistency in reporting DN dosing parameters and AE**. We could not determine if DN dosing affects outcomes, whether DN consistently produces clinically meaningful changes, or establish optimal dosage. Without more detailed reporting, replication of methods in future investigations is severely limited. **A standardized method is lacking to report, classify, and provide context to AE from DN**. Without more detailed AE reporting in clinical trials investigating DN efficacy, a more thorough appraisal of relative risk, severity, and frequency was not possible. Based on these inconsistencies, adopting a standardized checklist for reporting DN dosage and AE may improve internal and external validity and the generalizability of results.”

- **Acupuncture Clean Needle Technique Training Manual Warnings**
 - *2024 Clean Needle Technique (CNT) Manual*
 - “Pneumothorax is also a complication of dry needling. This can be seen with the patient who suffers pneumothorax during a demonstration of deep dry needling (DN) to treat the iliocostalis muscle. (45)”
 - “The primary areas associated with acupuncture or dry needling-induced pneumothorax are the regions of the thorax including the upper trapezius, thoracic paraspinal, medial scapular, and subclavicular areas.”

5. Regulatory Warnings and Recommendations

- The World Health Organization (WHO) guidelines on acupuncture training recommend minimum training hours ranging from 200–2,500 hours depending on the practitioner's background.
 - Oregon Medical Board requires 300 additional training hours for MDs/DOs before performing acupuncture.
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6. Current State of Affairs

- Peer-Reviewed Reports
- Sources:
 - Valera-Calero JA, Plaza-Manzano G, Rabanal-Rodríguez G, et al. **Current state of dry needling practices: a comprehensive analysis on use, training, and safety.** *Medicina (Kaunas)*. 2024 Nov 14;60(11):1869. doi: 10.3390/medicina60111869.
 - **Background and Objectives:** Dry needling (DN) is a technique that involves inserting a thin filament needle through the skin to target myofascial trigger points for the treatment of musculoskeletal pain and dysfunction. Despite its efficacy in a broad plethora of musculoskeletal pain conditions, its safety remains a topic of debate among clinicians and researchers. The aim of this study was to provide an overview of the current practice of DN through a national survey, focusing on the frequency of its use and the incidence of adverse events (AEs), considering factors including physiotherapist experience, clinical workload, the extent of training received by practitioners, and the use of ultrasound guidance. *Materials and Methods:* An online cross-sectional survey was conducted. Respondents were licensed physical therapists (PTs) working in Spain. The survey covered demographics, professional data, frequency of adverse effects, and if they use ultrasound routinely for guiding interventions.
Results: A total of 422 PTs participated in the study, mostly having 21-60 h of DN training (38.6%), less than 2 years of experience (36%), and not using ultrasound during the interventions (85.5%). Post-needling soreness and bent needles were the most common AEs, with most severe events rarely reported. **Adverse event frequencies varied significantly based on training hours, experience, patient percentage treated with DN,** and weekly clinical dedication. Clinicians with more hours of DN training or fewer years of experience reported higher incidences of certain complications.
Conclusions: DN is a common intervention among PTs, with minor AEs

frequently occurring and major AEs being less common but still significant. The accidental puncture of non-desired structures highlights the necessity for improve training on anatomical landmarks, needle insertion depth, cross-sectional anatomy education, and patient monitoring. To ensure safe practice, emphasize comprehensive training, adhere to safety protocols, exercise caution, and prioritize the use of ultrasound-guide is encouraged.

B. SAFE: DRY NEEDLING HAS BEEN DEMONSTRATED TO BE SAFE, WITH MINOR OCCURRENCE OF MAJOR ADVERSE EVENTS

- **Safety of Dry Needling**
- **Peer-Reviewed Sources**
 - **Barrett TL, Kearns GA, Puentedura EJ, Brismée J-M. Dry needling in United States doctor of physical therapy programs: safety assessment and adverse event reporting. *J Phys Ther Educ.* 2025 Mar 11. doi: 10.1097/JTE.000000000000393. Online ahead of print.**
 - **“Introduction:** Despite the growing clinical use of dry needling (DN) among physical therapists in the United States and its gradual adoption into entry-level Doctor of Physical Therapy (DPT) programs, limited research exists on DN safety within educational settings. This study aims to report the type and incidence of adverse events (AEs) associated with DN instruction in DPT programs.
Review of literature: To date, there has been **no reporting on DN-related AEs during DPT education, making the relative risk of DN education unclear.**
Subjects: Three hundred thirty-eight students and 10 faculty members from 10 US DPT programs.
Methods: Questionnaires and structured interviews investigated the type and incidence of AEs during DN instruction in DPT programs. Students documented prelaboratory comfort levels with DN and AEs experienced by their partners during laboratory practice. Postlaboratory interviews with DPT faculty gathered insights into AEs during instruction. Statistical methods included descriptive frequencies of AEs and reported pain. The AEs were classified as side effects, minor, moderate, or major, and were reported as percentages of total needle insertions and by body region.
Results: Among 338 DPT students (mean age = 26.3 years), **no major or moderate AEs were recorded over 1,173 needle insertions and 16 muscle**

areas. The most reported side effects were soreness (48%) and pain (37%). Pain was self-reported by 50% of students, with the majority experiencing low levels (0-3/10) on the numerical pain rating scale. Lower prelaboratory comfort levels were reported between those who experienced a minor AE and those who did not ($P = .030$). Side effects and minor AEs in DPT education appeared to closely resemble those in clinical settings.

Discussion and conclusion: Student safety performing DN was high, with **no major AEs reported**. Faculty self-selection of muscle areas may have influenced major AE reporting. Findings suggest that DN can be safely included within DPT education, with risks similar to those in clinical practice.”

- **Malfait I, Gijbbers S, Smeets A, et al. Safety of dry needling in stroke patients: a scoping review. *Eur J Phys Rehabil Med.* 2024 Apr;60(2):225-232. doi: 10.23736/S1973-9087.24.08224-8. Epub 2024 Mar 19.**

- **“Introduction:** Spasticity is a common problem in stroke patients. Treatments of spasticity often have side effects or are insufficiently effective. Dry needling (DN) has been proposed as a potential additional option to consider in the multimodal treatment of post-stroke spasticity, although questions about its safety remain. The goal of this study is to assess the safety of DN in stroke patients.

Evidence acquisition: A systematic search in Medline, Embase, The Cochrane Library, Web of Science, CIHNAL and PEDro was conducted in June 2023. Two reviewers independently screened abstracts according to the eligibility criteria.

Evidence synthesis: Twenty-five articles were included in this review.

Only six studies reported adverse events, all of which were considered minor. None of the included studies reported any serious adverse events. In four of the included studies anticoagulants were regarded as contra-indicative for DN. Anticoagulants were not mentioned in the other included studies.

Conclusions: There is a paucity of literature concerning the safety of DN in stroke patients. This review is the first to investigate the safety of DN in stroke patients and based on the results there is insufficient evidence regarding the safety of DN in stroke patients.

Clinical rehabilitation impact: Although DN could be a promising treatment in post-stroke spasticity, **further research is indicated to investigate its mechanism of action and its effect on outcome.**

However, before conducting large clinical trials to assess outcome parameters, the safety of DN in stroke patients must be further

investigated.”

- **Boyce D, Wempe Hm Campbell C, et al. Adverse events associated with therapeutic dry needling. *Int J Sports Phys Ther.* 2020 Feb;15(1):103–113.**

- **“Background:** There is a **paucity of literature** about the adverse events associated with Therapeutic Dry Needling (TDN). Much of the literature surrounding adverse events associated with TDN has been extrapolated from the acupuncture literature. Given that acupuncture and TDN are distinctly different in their application and proposed mechanisms, adverse events associated with TDN should be examined specifically.

Purpose: To determine and report the type of adverse events associated with the utilization of TDN.

Study Design: Prospective Questionnaire

Methods: Four hundred and twenty physical therapists participated in this study. Information related to minor and major adverse events that occurred during 20,464 TDN treatment sessions was collected. Each physical therapist respondent was asked to fill out two weekly self-reported electronic surveys over a six-week period. One survey was related to “minor adverse events” (i.e. pain, bleeding, bruising), while the other was related to “major adverse events” (i.e. pneumothorax, excessive bleeding, prolonged aggravation). Following the six-week period, descriptive statistics were used to describe the adverse events (AE) associated with TDN and calculate the frequencies of those events.

Results: A total of 7,531 minor AE's were reported, indicating that 36.7% of the reported TDN treatments resulted in a minor AE. **The top three minor AE's were bleeding (16%), bruising (7.7%), and pain during dry needling (5.9 %).** The average ratio of minor AE's for all respondents across all weeks was 0.53 or approximately one event for every two patients. **Twenty major AE's were reported out of the 20,494 treatments for a rate of <0.1% (1 per 1,024 TDN treatments).** *No associations were noted between the frequency of adverse events and the number of patients treated, practitioner age, level of education, years in*

practice, level of training or months experience with dry needling.

Conclusion: Expected minor AE's such as mild bleeding, bruising, and pain during TDN were common and major AE's were rare.

Physical therapists and other medical practitioners need to be aware of the risks of TDN. Based on the findings of this study the overall risk of a major adverse event during TDN is small.