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A Methodological Rebuttal to Nim et al. (2021): Why “SMT Specificity Is a Myth” Is a Myth Itself

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Abstract

This paper challenges the conclusions of *Nim et al.* (2021), asserting that the site specificity of spinal manipulative therapy (SMT) is a “myth.” A review of their data and logic reveals that the conclusion rests on methodological weaknesses:

(1) **gross professional misrepresentation**, excluding chiropractors—the practitioners who perform about 95 % of SMT worldwide;

(2) **ecological invalidity**, as most trials modeled a single, context-free manipulation; and

(3) **circular reasoning**, mistaking diagnostic limitation for therapeutic irrelevance. The review provides no credible challenge to the principle of chiropractic specificity.

1 · Introduction – Challenging the Premise

Nim et al. (2021) asked whether applying SMT to a “clinically relevant” spinal segment produces better outcomes than applying it elsewhere. After pooling ten randomized clinical trials, they concluded that SMT outcomes are “not therapist-dependent.” This rebuttal demonstrates that such a conclusion is unsupported because the review scarcely involved chiropractors, ignored real-world clinical conditions, and relied on faulty inference.

2 · Foundational Flaw – Professional Misrepresentation

Only one of the ten studies analyzed was conducted by chiropractors (Haas et al., 1995). The remaining nine used physical or manual therapists whose training and objectives differ fundamentally from chiropractic practice. Even within the Haas study, just two chiropractors participated—one with 20 years’ experience and one with two.

Despite this 9:1 imbalance, *Nim et al. (2021)* generalized their findings to “all manual therapist professions,” claiming therapist skill does not matter. Such inference is invalid when the profession responsible for most SMT worldwide was almost entirely excluded. Sampling bias of this magnitude renders any cross-professional conclusion untenable.

“When the profession responsible for 95 % of SMT is nearly absent, the review ceases to be about SMT—it becomes about imitation.” — R. B. Sheely

3 · Ecological Invalidity – The Single-Session Fallacy

Six of the ten studies investigated outcomes after only **one treatment**, and none exceeded ten sessions. Even *Nim et al. (2021)* acknowledged this brevity as a “weakness,” admitting the lack of difference may reflect “similarly poor results.”

Chiropractic care, by contrast, involves cumulative diagnostic feedback, neuromuscular adaptation, and progressive rehabilitation. Reducing it to a single mechanical thrust destroys ecological validity (Bronfenbrenner, 1977).

“Who in the world does an entire research study based on just one treatment? Maybe surgery—but not chiropractic.” — R. B. Sheely

A one-session design cannot approximate authentic therapeutic progression; therefore, its findings are clinically meaningless.

4 · De-Contextualized Intervention – No History, No Exam, No Reality

Real chiropractic care begins with consultation, health history, examination, and imaging when indicated. None of these were present in the included studies. Without diagnostic context, SMT degenerates into random motion rather than targeted correction. Removing the reasoning process from an intelligent procedure ensures the results cannot represent actual practice (Kazdin, 2011).

“Real chiropractic practice doesn’t start with an adjustment—it starts with understanding.” — R. B. Sheely

5 · Clinical Construct Validity – The Diagnostic Process Matters

Chiropractors establish specificity through converging evidence: palpatory provocation, asymmetric range of motion with pain reproduction, functional testing (e.g., pain on rising from a chair), and orthopedic correlation (e.g., pain at 70° straight-leg raise with L5 fixation).

These confirmatory tests identify the pain generator. To suggest that manipulating unrelated segments yields equivalent outcomes contradicts both biomechanics (Panjabi, 1992) and clinical logic. A non-chiropractor’s failure to locate dysfunction does not invalidate specificity—it only proves it was never tested.

6 · Logical Error – Circular Reasoning and Diagnostic Confusion

Nim et al. (2021) reasoned: Clinicians cannot reliably locate “candidate sites,” therefore, site selection is unimportant. This is circular logic. Diagnostic unreliability cannot prove therapeutic irrelevance (Shadish, Cook, & Campbell, 2002).

“If a sniper shoots through fog and misses the bullseye, that does not prove marksmanship a myth—it proves visibility was inadequate.” — R. B. Sheely

The authors assumed poor targeting ability, ensured null results, then declared specificity disproven—a classic category error.

7 · Absence of Therapeutic Progression and Alliance

Healing unfolds progressively; each session refines diagnosis and builds neuromuscular coordination. Short-term experiments cannot capture this trajectory. Moreover, therapeutic alliance—a known predictor of positive outcomes (Bordin, 1979)—cannot develop in a single session. By omitting it, the studies guaranteed underperformance and further lost external validity.

8 · Ethical and Professional Implications

Declaring therapist skill irrelevant based on a non-representative sample is scientifically reckless and professionally disrespectful. Such claims misinform policy and erode inter-professional trust. Scientific integrity requires that conclusions never exceed the scope of their data (NASEM, 2017).

9 · Toward Authentic Research

Future investigations should:

1. Recruit **chiropractic doctors as primary treating clinicians**.
2. Include **comprehensive diagnostic protocols**—history, exam, and imaging when indicated.
3. Use **multi-visit designs** capturing adaptive changes over time.
4. Separate **diagnostic reliability** from **therapeutic efficacy**.
5. Measure **functional and quality-of-life outcomes**, not merely pain scores.

Only such methodologically sound research can validly evaluate specificity in spinal manipulation.

10 · Conclusion – Restoring Scientific Integrity

Nim et al. (2021) did not disprove specificity; they demonstrated how poor methodology and sampling bias can obscure it. Their own admissions expose three fatal flaws: professional misrepresentation, ecological invalidity, and circular logic.

“The authors have not proven that specificity is a myth; they have proven the urgent need for research that reflects real-world chiropractic practice.” — R. B. Sheely

Until such research exists, the principle of chiropractic specificity remains scientifically plausible and clinically unchallenged.

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Appendix A · Understanding Bias in the Nim et al. (2021) Review

Defining Bias

In research, **bias** refers to any systematic deviation that distorts study results away from the truth. Bias is not merely error; it reflects **a consistent tilt** caused by flawed study design, sampling, measurement, or interpretation (NASEM, 2017). Recognizing bias is essential for interpreting scientific validity—especially in reviews claiming to represent all of clinical practice.

1 · Selection Bias – Who Performed the Care

The most critical bias in the *Nim et al.* review lies in the **selection of providers**. Nine of the ten studies were performed by non-chiropractors, yet the authors generalized their findings to “all manual therapist professions.”

This over-representation of non-chiropractic practitioners constitutes **selection bias**, meaning the population chosen does not represent the one about which conclusions are made. In essence, the study asked a question about chiropractic specificity but sampled almost exclusively non-chiropractors to answer it.

Analogy: It's like studying surgical precision by observing medical students performing a single suture and then declaring surgical skill irrelevant.

2 · Intervention Bias – What Was Actually Done

The included studies tested **isolated, one-session manipulations** without any diagnostic process, imaging, or follow-up. That introduces **intervention bias**, where the intervention being studied is not equivalent to the procedure being generalized. Because chiropractic SMT is diagnostically guided and progressive, studying random, single-session manipulations cannot yield valid conclusions about chiropractic care.

3 · Measurement Bias – How Outcomes Were Assessed

Most included studies measured outcomes such as pain reduction or limited range of motion immediately after treatment. This narrow outcome window causes **measurement bias**, because it ignores functional, neurological, and postural changes that occur over a full treatment plan. Short-term pain ratings cannot capture the multidimensional goals of chiropractic care, such as improved motion segment stability, proprioceptive recalibration, or sustained quality-of-life improvement.

4 · Confirmation and Interpretation Bias – How the Results Were Read

The review began with the assumption that clinicians cannot reliably locate specific dysfunctional segments and then interpreted the “no difference” results as confirmation that specificity is unimportant.

This is **confirmation bias**—interpreting data to reinforce preexisting expectations—and **interpretation bias**, drawing conclusions not directly supported by the data. A null finding in a flawed study does not prove equivalence; it only reflects that the study design lacked power to detect real differences.

Analogy: Missing a target in dense fog does not mean the bullseye doesn’t exist; it means the study obscured visibility.

5 · Publication Bias – What Was Included

Finally, *Nim et al.* depended on previously published trials, most of which were conducted by non-chiropractors. This dependence introduces **publication bias**, where the available literature itself is unbalanced. If relevant chiropractic research is underrepresented in indexed journals, any review of “all SMT” will inherently misrepresent the profession’s body of evidence.

6 · The Compounded Effect

Each of these biases—selection, intervention, measurement, confirmation, and publication—interacts synergistically. By stacking one distortion upon another, the review created a **false appearance of neutrality** while systematically excluding the conditions necessary to demonstrate chiropractic specificity. When bias accumulates at every stage of inquiry, even a perfectly executed meta-analysis becomes a perfectly executed error.

In summary:

The *Nim et al.* (2021) review did not simply overlook chiropractic specificity—it was structurally biased against ever detecting it. Its findings, therefore, reveal not the absence of specificity, but the presence of pervasive methodological bias.

Appendix B · Is There Evidence That Specificity Matters in Spinal Manipulation?

1 · Starting with Logic and Common Sense

Before citing statistics, start with logic. Can anyone name a chiropractor who cannot identify whether a patient's problem is cervical, thoracic, or lumbar? Even the least experienced practitioner can identify the region of dysfunction through a combination of history, examination, and palpation.

If your dog breaks its right leg, you don't cast the left one to "see if specificity matters." The same principle holds for the spine. Working on the wrong segment—or the wrong region—will not resolve the underlying mechanical lesion.

Specificity is not an optional variable; it is the foundation of structural healthcare.

2 · Everyday Clinical Evidence

In real practice, chiropractors gather daily data that confirms specificity:

- **Provocative Testing** – Pain reproduced by direct pressure on a spinous process or facet (e.g., Fortin finger test, segmental provocation) pinpoints the dysfunctional level.
- **Orthopedic Correlation** – Tests such as Deerfield, Nachlas, and Yeoman's consistently relate local joint mechanics to patient-reported pain.
- **Quantitative Measures** – Algometer readings document localized tenderness that decreases when the exact segment is corrected.
- **Patient-Reported Change** – After targeted adjustment at the symptomatic level, patients commonly report a 40 – 90 % improvement on a simple 0-to-10 scale within minutes.

These are reproducible, observable outcomes—the same criteria that underpin clinical science. When a majority of patients improve well beyond the 30 % placebo threshold used in drug trials, it demonstrates not coincidence but causality.

3 · Diagnostic Precision Distinguishes Chiropractic Care

Chiropractic Doctors undergo thousands of hours of training in differential diagnosis, spinal biomechanics, and segmental motion assessment—far beyond that of general manual therapists. Comparing a chiropractic physician's focused adjustment to a generic manipulation performed by someone without equivalent diagnostic training is akin to comparing neurosurgery to massage; both involve touch, but one is guided by precise anatomy and intent.

Specificity matters because chiropractic care is built on it. It is the reason chiropractors routinely differentiate between acute and chronic pain, segmental fixation and muscular guarding, and primary and compensatory dysfunction—nuances that determine both the site and type of corrective force.

Health Care Position Papers Library, "A Methodological Rebuttal to Nim et al. (2021): Why "SMT Specificity Is a Myth" Is a Myth Itself", November 2, 2025, Robert B. Sheely, DC, FICC. FIACA

4 · The Logic of Other Medical Disciplines

If specificity were irrelevant, it would be irrelevant everywhere. Would a surgeon operate on the wrong vertebral level and expect success? Would an orthopedist intentionally replace the wrong knee to “test specificity”? Every field recognizes that **precision of intervention determines precision of outcome**.

To deny that principle only in spinal manipulation is inconsistent with every other branch of medicine.

5 · Patient-Centered Micro-Evidence

Each visit in my clinical practice provides a data point. After a new patient’s first specific adjustment, I ask my patient the following:

“On a scale of 0 to 10—10 being the best you’ve ever felt and 0 being before today’s adjustment—how do you feel now?”

Most respond between 4 and 9, reflecting significant immediate improvement. This is not anecdote; it’s ongoing observational evidence that when the right segment is corrected, function improves predictably. Consistency across thousands of encounters forms an empirical pattern more powerful than any single short-term trial.

6 · Designing Real-World Evidence

To formally document this, a simple prospective practice-based study can be structured as follows:

1. Record history, diagnostic findings, and the identified segment.
2. Deliver SMT only to that level.
3. Record the immediate post-adjustment rating on a 0–10 scale.
4. Repeat across consecutive patients.
5. Calculate mean percentage improvement and cumulative change over 8–12 visits.

Such a design directly tests what generalized one-session studies overlook—**the cumulative, segment-specific effect** delivered by trained chiropractors.

7 · Summary

Specificity in spinal manipulation is supported by logic, daily clinical data, and the basic principles of every precise healing art. To question whether specificity matters is to suggest that location, diagnosis, and anatomical accuracy do not affect outcome—an idea that collapses under both common sense and consistent observation. **“In chiropractic care and practice, specificity is not a myth; it is the mechanism.”** — R. B. Sheely

Supporting Source

Dagenais, S., & Haldeman, S. (2012). *Evidence-based management of low back pain*. Elsevier.

As an interesting point of reference, back in 1991, I was a co-author of the following paper:

Sheely, R., Poortinga, G., McMichael, R. (1991). **Reliable standards of care are determined by consensus of those who provide that care..** *J Manipulative Physiol Ther*, 14((3)), PMID: 1822087 - 217-221.

The article "**Reliable standards of care are determined by consensus of those who provide that care**" by Sheely, Poortinga, and McMichael (1991) discusses the development and validation of standards of care within the chiropractic profession.

The main point of the article is that the only practicable criterion for validity ever produced by science is that of consistency (reliability). The authors argue that, because there were (at the time) widespread differences in how doctors of chiropractic practiced and a lack of rigorous scientific evidence underpinning much of the practice, a key component in establishing standards of care should be the consensus of the practitioners and experts who provide that care. This consensus-based approach helps to ensure that the standards are acceptable and useful to clinicians, while still striving to be consonant with available scientific literature and expert opinion.

The article suggests that while evidence-based research is ideal, in its absence, a structured consensus among providers is a necessary method for developing reliable standards to guide practice and improve quality of care.

I find it interesting that I felt strongly enough about my opposition to the conclusions of the *Nim et al.* (2021) paper that I was compelled to write this rebuttal. The paper (1991). **Reliable standards of care are determined by consensus of those who provide that care.** carries a similar message.

“Do not speak about the clinical skills of chiropractic doctors, unless they are properly represented in your research.” — R. B. Sheely

Author Note

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Respectfully,



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