


# A Proposed Diagnostic and Treatment Algorithm for the Management of Lumbar Discogenic Pain [Letter]

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## Dear editor

We read with interest the recent article by Lorio et al, “A Proposed Diagnostic and Treatment Algorithm for the Management of Lumbar Discogenic Pain”.<sup>1</sup> The authors are to be commended for synthesizing a substantial body of evidence and presenting a clear, structured approach to this complex condition.

While we agree with the overall conclusions, we suggest that the proposed algorithm could be further strengthened by explicitly incorporating multifidus dysfunction, which frequently accompanies lumbar degenerative disc disease. A growing body of evidence demonstrates that chronic inhibition and degeneration of key spinal stabilizers—particularly the multifidus muscle—are highly prevalent in patients with discogenic pain and may contribute to persistent pain and disability even after structural nociceptive sources have been addressed.<sup>2,3</sup>

Substantial clinical and preclinical evidence supports a close pathophysiological relationship between disc degeneration and multifidus dysfunction. Imaging studies consistently demonstrate strong associations between disc degeneration severity and multifidus atrophy and fatty infiltration, with Pfirrmann grade showing one of the strongest correlations.<sup>2,3</sup> Preclinical models support a causal link, demonstrating rapid, segment-specific multifidus degeneration following experimental disc injury, mediated by reflex inhibition, inflammatory signaling, and biomechanical alterations.<sup>4</sup>

The original ReActiv8-B pivotal trial and its ongoing five-year outcomes, combined with the RESTORE RCT, now represent one of the most robust bodies of prospective, controlled evidence for any non-structural intervention in chronic mechanical low back pain. Notably, grade 3 or higher degenerative disc disease was present in approximately 70% of patients enrolled in ReActiv8-B, underscoring the substantial overlap between disc degeneration and lumbar motor control dysfunction and highlighting the importance of evaluating both entities during diagnostic assessment.<sup>5,6</sup> Further Level I evidence is provided by the recently published RESTORE randomized controlled trial, a multicenter, blinded, sham-controlled study comparing restorative neurostimulation with optimized conventional medical management in patients with chronic, intractable discogenic low back pain and confirmed multifidus dysfunction. At the primary endpoint of 120 days,  $\geq 50\%$  pain reduction was achieved in 63% of patients in the treatment group compared with 4% in the control arm ( $p < 0.0001$ ), with concomitant improvements in disability and quality of life that were sustained through the most recent follow-up.<sup>7</sup>

Integrating multifidus dysfunction into discogenic pain algorithms therefore represents an important opportunity. Given the current evidence, contemporary pain algorithms should incorporate both structural and neuromuscular contributors to achieve comprehensive care. We respectfully suggest that future iterations explicitly include an evidence-based pathway for multifidus dysfunction diagnosis and treatment in appropriately selected patients with predominant axially dominant chronic low back pain. Explicit consideration of multifidus dysfunction within diagnostic and treatment algorithms may enhance clinical decision-making and improve patient outcomes.

We appreciate the authors’ contribution and the opportunity to further advance this important discussion.

## Disclosure

Dr. Joyal and Dr. Francio are paid consultants for Mainstay Medical. Dr. Joyal also reports personal fees from Boston Scientific and Biotronik, outside the submitted work. The authors report no other conflicts of interest in this communication.

## References

1. Lorio MP, Beall DP, Myers TJ, et al. A proposed diagnostic and treatment algorithm for the management of lumbar discogenic pain. *J Pain Res.* 2025;18:3331–3343. PMID: 40625580; PMCID: PMC12230252. doi:10.2147/JPR.S522750
2. Cooley JR, Jensen TS, Kjaer P, et al. Spinal degeneration is associated with lumbar multifidus morphology in secondary care patients with low back or leg pain. *Sci Rep.* 2022;12(1):14676. PMID: 36038653; PMCID: PMC9424282. doi:10.1038/s41598-022-18984-1
3. Shi L, Yan B, Jiao Y, et al. Correlation between the fatty infiltration of paraspinal muscles and disc degeneration and the underlying mechanism. *BMC Musculoskelet Disord.* 2022;23(1):509. PMID: 35637476; PMCID: PMC9150320. doi:10.1186/s12891-022-05466-8
4. Brown SH, Gregory DE, Carr JA, et al. ISSLS prize winner: adaptations to the multifidus muscle in response to experimentally induced intervertebral disc degeneration. *Spine.* 2011;36(21):1728–1736. PMID: 21301396. doi:10.1097/BRS.0b013e318212b44b
5. Gilligan C, Volschenk W, Russo M, et al. Long-term outcomes of restorative neurostimulation in patients with refractory chronic low back pain secondary to multifidus dysfunction: two-year results of the ReActiv8-B pivotal trial. *Neuromodulation.* 2023;26(1):87–97. PMID: 35088722. doi:10.1016/j.neurom.2021.10.011
6. Gilligan C, Volschenk W, Russo M, et al. Five-year longitudinal follow-up of restorative neurostimulation shows durability of effectiveness in patients with refractory chronic low back pain associated with multifidus muscle dysfunction. *Neuromodulation.* 2024;27(5):930–943. PMID: 38483366. doi:10.1016/j.neurom.2024.01.006
7. Schwab F, Mekhail N, Patel KV, et al. Restorative neurostimulation therapy compared to optimal medical management: a randomized evaluation (RESTORE) for the treatment of chronic mechanical low back pain due to multifidus dysfunction. *Pain Ther.* 2025;14(1):401–423. PMID: 39812968; PMCID: PMC11751280. doi:10.1007/s40122-024-00689-0

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