

Multimodal Physiotherapy Management of Lumbar Disc Herniation: A Case Report

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Abstract

Background: Lumbar disc herniation may cause pain, muscle spasm, mobility limitations, and restrictions in daily and occupational activities. Physiotherapy may address these problems through a multimodal rehabilitation approach.

Objective: To describe the observed clinical changes following multimodal physiotherapy management in a patient with lumbar disc herniation.

Methods: This descriptive case report involved a 72-year-old man with lumbar disc herniation, approximately six months of symptoms, and physically demanding work as a gardener. Initial assessment was conducted on April 29, 2026, and final evaluation on May 4, 2026. The patient received four physiotherapy sessions, each lasting 75 minutes, at Physio Sakti Clinic, Makassar, Indonesia. The intervention included physical modalities, manual techniques, stretching, therapeutic exercises, lumbar traction, bridging and strengthening exercises, and walking training. Pain intensity was assessed using the Visual Analog Scale (VAS), and anxiety using the Hamilton Rating Scale for Anxiety (HRS-A).

Results: Resting pain decreased from 2 to 0, movement pain from 7 to 3, and pressure pain from 8 to 5 on the VAS. The HRS-A score decreased from 15 to 10. No adverse events were reported during the intervention period. Postintervention measurements for muscle spasm, mobility, muscle strength, flexibility, activities of daily living, and occupational function were unavailable.

Conclusion: Following four sessions of multimodal physiotherapy, reductions in recorded pain intensity and HRS-A scores were observed. However, this single case, multimodal intervention, and limited outcome follow-up preclude conclusions regarding causal effectiveness or longer-term functional outcomes.

Keywords:

Intervertebral Disc Displacement; Low Back Pain; Pain Measurement; Physical Therapy Modalities; Rehabilitation; Anxiety

Introduction

Lumbar disc herniation (LDH) is a clinically important spinal condition characterized by displacement of intervertebral disc material beyond its normal anatomical boundaries. Depending on the involvement of adjacent neural structures, LDH may be associated with low back pain, radicular symptoms, sensory disturbances, and motor deficits.¹ The lower lumbar segments, particularly L4–L5 and L5–S1, are commonly affected because of their substantial exposure to mechanical loading during daily activities and repetitive physical tasks.² The development of LDH is multifactorial and may involve degenerative changes in the intervertebral disc, alterations in disc composition, mechanical loading, and structural disruption.² Epidemiological evidence further indicates that the occurrence of LDH may vary according to demographic, occupational, and lifestyle-related factors, emphasizing the contribution of both individual and environmental factors to its clinical presentation.³

The consequences of LDH may extend beyond pain alone.⁴ Patients can experience limitations in mobility, walking, and other daily activities, while radicular symptoms and persistent pain may contribute to disability and reduced quality of life.⁴ These consequences may be particularly relevant among individuals whose occupations involve repetitive bending, lifting, digging, prolonged standing, or other physically demanding activities.⁴ In the present case, the patient was a 72-year-old man who worked as a gardener and reported occupational activities involving digging, lifting, and prolonged lumbar flexion. He had experienced lumbar symptoms for approximately six months, accompanied by pain, muscle spasm, limitations in walking and ambulation, and difficulties performing occupational activities. These clinical and occupational characteristics illustrate the potential interaction between lumbar symptoms, physical function, and participation in daily and work-related activities.

Persistent musculoskeletal pain may also be accompanied by psychological consequences that influence the overall clinical presentation.⁵ In the present case, the initial Hamilton Rating Scale for Anxiety (HRS-A) score was 15 and was classified as mild anxiety according to the classification applied in the original assessment.⁶ The coexistence of pain, functional limitations, occupational demands, and anxiety supports the need for a comprehensive physiotherapy assessment that considers multiple clinical domains rather than focusing exclusively on symptom intensity.^{5,7} Such an approach is relevant because rehabilitation planning should be individualized according to the patient's clinical presentation, functional problems, and treatment goals while avoiding assumptions that all observed impairments arise from a single underlying mechanism.⁴

Conservative management remains an important component of care for patients with LDH who do not present with serious neurological deficits or other conditions requiring urgent surgical management.¹ Physiotherapy interventions may include therapeutic exercise, manual techniques, traction, physical modalities, and functional training, depending on the patient's clinical presentation and rehabilitation needs.^{8,9} However, the available evidence demonstrates substantial variability in intervention protocols, patient characteristics, outcome measures, and follow-up periods. Consequently, the relative contribution of individual components within a multimodal rehabilitation program cannot always be clearly distinguished.⁸ Recent systematic reviews have reported that exercise-

based and other conservative physiotherapy approaches may be associated with improvements in patients with LDH, although heterogeneity in treatment protocols and study populations limits direct comparison across interventions.^{8,9} In addition, evidence regarding the role of physiotherapy in radicular pain associated with LDH remains insufficient to determine which specific intervention is most appropriate for particular patient subgroups.¹⁰

Therapeutic exercise represents an important component of conservative rehabilitation because it may address movement-related problems, physical capacity, and functional limitations associated with lumbar conditions.^{8,9} Other interventions, including manual techniques, physical modalities, and traction, may also be incorporated according to the patient's clinical presentation and rehabilitation objectives.⁸ Nevertheless, the combination of several interventions complicates the interpretation of treatment outcomes because changes observed after a multimodal program cannot be attributed to a single component.^{8,9} Therefore, multimodal physiotherapy should be understood as a clinically selected combination of interventions rather than as evidence that each component independently contributes to an observed change.

In the present case, the physiotherapy program was directed toward the patient's reported pain, muscle spasm, anxiety, and functional limitations. The documented intervention included infrared therapy, interferential therapy, connective tissue release, neuromuscular techniques, stretching, therapeutic exercises, lumbar traction, bridging and strengthening exercises, and activities of daily living training. The patient received four physiotherapy sessions, each lasting 75 minutes, at Physio Sakti Clinic, Makassar, Indonesia, with the initial assessment conducted on April 29, 2026, and the final evaluation performed on May 4, 2026. Although the intervention was delivered by an authorized physiotherapist, the multimodal nature of the program prevents attribution of observed changes to any individual treatment component.

Because this report describes a single patient and does not include a comparison group, the observed clinical changes cannot establish treatment effectiveness or a causal relationship between the intervention and the outcomes. Furthermore, postintervention data were available only for pain intensity and anxiety, whereas corresponding measurements for several initially identified clinical and functional problems were not available. The present report is therefore descriptive and emphasizes the documented clinical presentation, physiotherapy management, and outcomes that were actually measured. Accordingly, this case report aimed to describe multimodal physiotherapy management and the observed changes in pain intensity and anxiety in a patient with lumbar disc herniation.

Methods

This study was a descriptive single-case report designed to describe the physiotherapy assessment, intervention, and documented clinical outcomes in a patient with lumbar disc herniation (LDH). The report focused on the clinical management of an individual patient and the changes observed during the documented treatment period. Therefore, the study was not designed to test intervention effectiveness or establish a causal relationship between the physiotherapy program and the observed outcomes.

The patient was a 72-year-old man who worked as a gardener and had experienced lumbar symptoms for approximately six months. His occupational activities included digging, lifting, and prolonged lumbar flexion. Based on the available clinical documentation, the patient presented with lumbar pain, muscle spasm involving the quadratus lumborum, piriformis, and gluteal muscles, limitations in walking and ambulation, and difficulties performing occupational activities. The patient reported having previously undergone a computed tomography scan to evaluate the lumbar region. However, the original imaging report, specific findings, and diagnostic criteria were not available for this case report. The diagnosis of LDH was documented in the available clinical information and the patient received physiotherapy management at Physio Sakti Clinic, Makassar, Indonesia. Because the original diagnostic documentation was incomplete, the imaging findings were not retrospectively reconstructed or inferred.

The initial physiotherapy assessment was conducted on April 29, 2026. The assessment included history taking, physical examination, measurement of vital signs, pain assessment, anxiety assessment, and selected clinical tests. At baseline, blood pressure was 130/80 mmHg, heart rate was 89 beats/min, peripheral oxygen saturation was 99%, body temperature was 36.5°C, and respiratory rate was 20 breaths/min. Pain intensity was assessed using the Visual Analog Scale (VAS). The recorded baseline scores were 2 for resting pain, 7 for movement pain, and 8 for pressure pain. Anxiety was assessed using the Hamilton Rating Scale for Anxiety (HRS-A), with a baseline score of 15, which was classified as mild anxiety according to the classification used in the original assessment. The assessment was performed by the authorized physiotherapist responsible for the patient's care. However, the original documentation did not specify the language or version of the HRS-A; therefore, this information could not be reported.

The physical examination documented tenderness in the thoracolumbar and lumbosacral regions and in the quadratus lumborum, piriformis, and gluteal muscles, together with muscle spasm in these areas. Selected clinical tests included the straight leg raise test, Patrick test, anti-Patrick test, bridging test, Williams flexion test, compression test, and Valsalva maneuver. These tests were used as components of the physiotherapy assessment and were interpreted according to their respective examination purposes. Their findings were not used as independent confirmation of LDH or as definitive evidence of a specific structural pathology.

The intervention was delivered by an authorized physiotherapist at Physio Sakti Clinic, Makassar, Indonesia. The patient received four physiotherapy sessions, each lasting approximately 75 minutes, between the initial assessment on April 29, 2026, and the final evaluation on May 4, 2026. The documented program consisted of infrared therapy, interferential therapy, connective tissue release of the lumbar region, neuromuscular techniques, stretching exercises targeting the quadratus lumborum, gluteal muscles, and piriformis, McKenzie exercises, Bugnet exercises, Williams flexion exercises, elongated lumbar exercises, lumbar traction, bridging exercises, strengthening exercises, and activities of daily living training involving walking.

The available intervention parameters were retained without modification. Infrared therapy and interferential therapy were each administered for 10 minutes. Connective tissue release and neuromuscular techniques were each performed for 5 minutes. Stretching exercises targeting the quadratus lumborum, gluteal muscles, and piriformis were performed for 8 counts and 3 repetitions. McKenzie exercises, Bugnet exercises, bridging exercises, and strengthening exercises were each performed for 8 counts and 3 repetitions. Williams flexion, lumbar rotation, elongated lumbar exercises, lumbar vibration, and lumbar traction in side-lying and prone-lying positions were documented as being performed for 3 repetitions. Activities of daily living training included walking practice and functional movement training.

Although the total number of sessions and duration of each session were available, the original documentation did not provide a complete chronological sequence of every intervention component within each treatment session or detailed criteria for exercise progression, individual tailoring, or treatment modification. These parameters were therefore not inferred. Consequently, the intervention can be described only to the extent supported by the available documentation, and the multimodal nature of the program prevents attribution of observed changes to any individual treatment component.

The final evaluation was conducted on May 4, 2026, by the authorized physiotherapist responsible for the patient's care. The outcomes evaluated before and after the intervention period were pain intensity measured using the VAS and anxiety measured using the HRS-A. The analysis was descriptive and consisted of direct comparison between the recorded baseline and final evaluation scores. No inferential statistical analysis was performed because this report involved a single patient and was intended to describe observed clinical changes rather than estimate treatment effects.

The documented case sequence consisted of approximately six months of lumbar symptoms, an initial physiotherapy assessment on April 29, 2026, baseline VAS and HRS-A measurements, four sessions of multimodal physiotherapy, and a final evaluation on May 4, 2026. This sequence provides the basis for the case timeline presented in the accompanying flowchart or visual timeline. Postintervention measurements for muscle spasm, mobility, muscle strength, flexibility, activities of daily living, and occupational function were not available. Therefore, these domains were not interpreted as demonstrated treatment effects.

During the intervention period, the patient was monitored by the treating physiotherapist for complaints, adverse effects, and unexpected events. No complaints, adverse effects, or unexpected events were reported during the documented treatment period. The patient's perspective was also available from the clinical information. The patient reported feeling grateful for the treatment and perceived a reduction in pain, as well as an improved ability to assume a bending position. This perspective is presented descriptively and was not used as an objective measure of functional improvement.

Verbal informed consent was obtained from the patient during the initial examination. The available documentation did not provide information regarding written consent for publication or ethical approval or exemption. Therefore, no additional ethical statement beyond the documented verbal informed consent was inferred, and the final ethical and publication consent statements should remain consistent with the original documentation.

Results

The results are presented descriptively and are limited to outcomes for which both baseline and postintervention data were available. This approach was used to maintain consistency with the objective of the case report and to avoid interpreting clinical domains for which comparable follow-up measurements were not documented. Accordingly, the reported outcomes focused on changes in pain intensity measured using the Visual Analog Scale (VAS) and anxiety measured using the Hamilton Rating Scale for Anxiety (HRS-A). No inferential statistical analysis was performed because this report involved a single case and was intended to describe observed clinical changes.

The patient underwent four sessions of multimodal physiotherapy, each lasting approximately 75 minutes. The initial assessment and baseline outcome measurements were conducted on April 29, 2026, and the final evaluation was performed on May 4, 2026. The intervention period therefore extended between these two documented assessment points. The available postintervention outcomes are summarized in Table 1 to facilitate direct comparison with the corresponding baseline measurements.

Table 1. Recorded outcomes before and after multimodal physiotherapy

Outcome	Baseline	Postintervention	Observed change
VAS resting pain	2	0	Decreased by 2 points
VAS movement pain	7	3	Decreased by 4 points
VAS pressure pain	8	5	Decreased by 3 points
HRS-A score	15	10	Decreased by 5 points

VAS, Visual Analog Scale; HRS-A, Hamilton Rating Scale for Anxiety.

As presented in Table 1, all recorded pain measures showed lower values at the final evaluation than at baseline. Resting pain decreased from 2 to 0, movement pain decreased from 7 to 3, and pressure pain decreased from 8 to 5. Among the recorded pain outcomes, movement pain showed the largest absolute reduction, decreasing by 4 points. The HRS-A score decreased from 15 at baseline to 10 at the final evaluation. According to the classification used in the original assessment, both scores remained within the mild anxiety category.

The initial assessment also documented muscle spasm involving the quadratus lumborum, piriformis, and gluteal muscles, together with limitations in walking, ambulation, and occupational activities. Mobility, flexibility, muscle strength, activities of daily living, and occupational function were also identified as clinically relevant domains during the initial physiotherapy assessment. However, corresponding postintervention measurements for these domains were not available in the source documentation. Therefore, no conclusions regarding improvement, deterioration, or maintenance of these outcomes can be drawn from the available data.

The chronological sequence of the documented case is presented in Figure 1 to clarify the progression from the initial clinical presentation to the final outcome evaluation. The patient had experienced lumbar symptoms for approximately six months before undergoing the initial physiotherapy assessment on April 29, 2026. Baseline VAS and HRS-A measurements were obtained during the initial assessment, followed by four sessions of multimodal physiotherapy. The final evaluation, including repeated VAS and HRS-A measurements, was conducted on May 4, 2026.

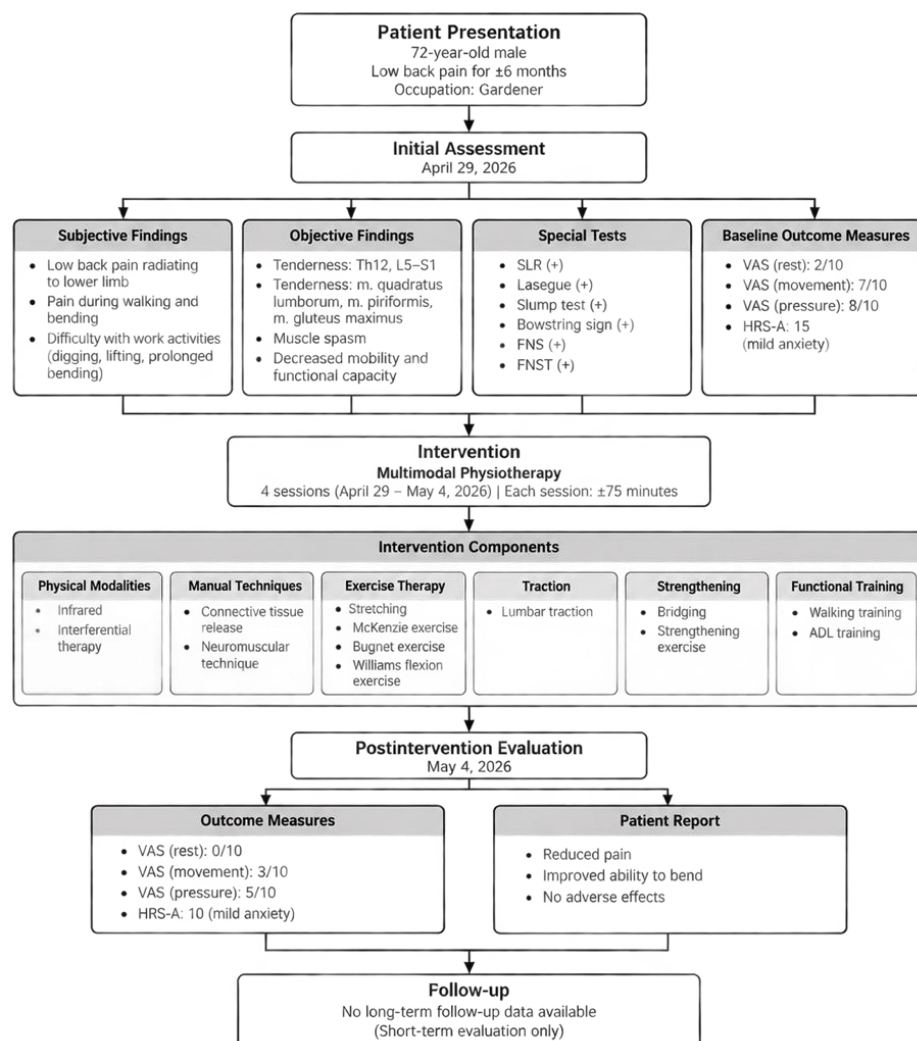


Figure 1. Clinical assessment, multimodal physiotherapy intervention, and outcome evaluation in a patient with lumbar disc herniation.

As illustrated in Figure 1, the documented treatment period was brief and included four physiotherapy sessions between the initial and final evaluations. The available outcome measurements demonstrated reductions in VAS pain scores and the HRS-A score at the final evaluation. However, because intermediate assessments and long-term follow-up were not available, the trajectory and persistence of these observed changes could not be determined.

The available data therefore demonstrate temporal changes in pain intensity and HRS-A scores between the documented baseline and final evaluation. However, the results do not identify the relative contribution of individual intervention components to these changes. In addition, because repeated measurements during the intervention period and long-term follow-up data were unavailable, the persistence and trajectory of the observed changes beyond the final evaluation could not be determined.

During the documented treatment period, the patient was monitored by the treating physiotherapist for complaints, adverse effects, and unexpected events. No complaints, adverse effects, or unexpected events were reported during the four physiotherapy sessions. The patient also reported a subjective reduction in pain and perceived an improved ability to assume a bending position. These statements represent the patient's subjective experience and were not used as objective evidence of functional improvement because standardized postintervention subjective measurements were unavailable.

Overall, the available results were restricted to the documented reductions in VAS pain scores and the HRS-A score, together with the patient's subjective report of reduced pain and improved ability to bend. The findings do not establish the effectiveness of the multimodal physiotherapy program, determine the contribution of individual intervention components, or demonstrate sustained changes in functional capacity, occupational performance, or other clinical outcomes that were not reassessed after the intervention period.

Discussion

This case report described the physiotherapy management of a 72-year-old man with lumbar disc herniation (LDH) who had experienced lumbar symptoms for approximately six months. The patient presented with pain, muscle spasm, mild anxiety, limitations in walking and ambulation, and difficulties performing occupational activities as a gardener. Following four sessions of multimodal physiotherapy, each lasting approximately 75 minutes, reductions were observed in the outcomes for which comparable baseline and postintervention data were available. Resting pain decreased from 2 to 0, movement pain decreased from 7 to 3, pressure pain decreased from 8 to 5, and the Hamilton Rating Scale for Anxiety (HRS-A) score decreased from 15 to 10. However, because postintervention measurements were unavailable for muscle spasm, mobility, flexibility, muscle strength, activities of daily living, and occupational function, interpretation must remain limited to the observed changes in pain intensity and anxiety.

The reduction in pain observed in this case is consistent with the broader literature indicating that conservative physiotherapy approaches may be associated with improvements in patients with LDH. A recent systematic review and meta-analysis reported improvements in outcomes following exercise, manipulation, and traction-based physiotherapy interventions, although substantial

heterogeneity was present across patient characteristics, treatment protocols, outcome measures, and follow-up periods.⁸ Similarly, exercise therapy has been associated with improvements in clinical outcomes among patients with LDH, although differences in intervention protocols and study populations limit direct comparison across studies.⁹ A systematic review examining conservative management and the role of physiotherapy in radicular pain also emphasized that the available evidence remains insufficient to determine which specific physiotherapy intervention is most appropriate for particular patient subgroups.¹⁰ Therefore, the present findings provide clinical context for the observed reduction in pain but do not demonstrate that the same magnitude or mechanism of improvement resulted from the intervention in this individual patient.

The physiotherapy program combined infrared therapy, interferential therapy, connective tissue release, neuromuscular techniques, stretching, therapeutic exercises, lumbar traction, bridging and strengthening exercises, and walking training. A multimodal approach may be clinically appropriate when several symptoms and functional problems are identified simultaneously.¹¹ Nevertheless, the combination of multiple intervention components represents an important interpretative limitation because the observed changes cannot be attributed to any individual modality or exercise. It is therefore not possible to determine whether the reductions in pain were associated with physical modalities, manual techniques, exercise, traction, therapeutic interaction, changes in activity, or the combined influence of multiple factors. The findings should consequently be interpreted as changes observed following a multimodal physiotherapy program rather than evidence supporting the independent effectiveness of any specific intervention component.

Movement pain showed the largest absolute reduction among the recorded pain outcomes, decreasing by 4 points from 7 to 3. This finding may be clinically relevant because the patient's occupation involved digging, lifting, and prolonged lumbar flexion. However, the available documentation did not include standardized postintervention measurements of walking capacity, occupational performance, activities of daily living, or other functional outcomes. Although the patient subjectively reported reduced pain and an improved ability to assume a bending position, this statement cannot substitute for standardized functional assessment. Therefore, the observed reduction in movement-related pain should not be interpreted as objective evidence of improved functional capacity or work ability.

The HRS-A score decreased from 15 to 10, although both values remained within the mild anxiety category according to the classification used in the original assessment.⁶ This finding represents a numerical reduction in the documented anxiety score, but it does not establish that physiotherapy independently reduced anxiety. The observed change may have been influenced by several factors, including changes in pain, increased confidence during treatment, therapeutic interaction, patient expectations, or other contextual factors that were not measured. Furthermore, because the original documentation did not specify the language or version of the HRS-A, the interpretation of this outcome should remain cautious. The reduction in HRS-A score should therefore be considered an associated observed change rather than a direct or isolated effect of a specific physiotherapy intervention.

Another important consideration is the natural course of the condition.¹ Symptoms associated with LDH may change over time independently of a specific intervention, and improvement observed after treatment does not necessarily demonstrate that treatment caused the improvement.⁴ This issue is particularly relevant in the present case because there was no control condition, repeated measurement series, or comparison with an alternative intervention. The short interval between the initial assessment on April 29, 2026, and the final evaluation on May 4, 2026, also limits interpretation of the trajectory and persistence of the observed changes. Consequently, spontaneous variation, regression to the mean, changes in daily activity, or other unmeasured contextual factors cannot be excluded as possible contributors to the observed outcomes.

The diagnostic documentation also represents an important limitation. The patient reported having previously undergone computed tomography of the lumbar region, but the original imaging report and its specific findings were not available for review. Similarly, the source and diagnostic criteria supporting the documented diagnosis of LDH were not available in the source records. The clinical tests performed during the physiotherapy assessment should therefore be interpreted as components of the clinical examination rather than as independent confirmation of structural disc pathology. This limitation restricts the extent to which the diagnostic characteristics of the case can be independently evaluated or compared with more comprehensively documented cases.

Several additional limitations should be considered when interpreting this report. First, this was a single-case report without a comparator, preventing estimation of what might have occurred in the absence of the intervention. Second, the multimodal intervention precludes identification of the relative contribution of individual treatment components. Third, although the number of sessions and duration of each session were available, the complete chronological sequence of interventions, progression criteria, individual tailoring, and treatment modifications were not fully documented. Fourth, several clinically relevant domains identified at baseline were not reassessed after the intervention. Finally, no long-term follow-up was available; therefore, the persistence of the observed reductions in pain and HRS-A scores cannot be determined. These limitations substantially restrict causal inference and generalizability.

Despite these limitations, the case provides a descriptive account of physiotherapy management in an older patient with prolonged lumbar symptoms and physically demanding occupational activities. The documented results showed reductions in pain intensity and HRS-A score following four sessions of multimodal physiotherapy. No complaints, adverse effects, or unexpected events were reported during the documented treatment period, although the short duration of observation limits conclusions regarding safety beyond the treatment period. The patient's subjective report of reduced pain and improved ability to assume a bending position also provides contextual information regarding his treatment experience, but it should not be interpreted as an objective functional outcome.

Overall, this case does not establish the effectiveness of multimodal physiotherapy or demonstrate a causal relationship between the intervention and the observed changes. Rather, it describes temporal reductions in recorded pain intensity and anxiety scores following a documented four-session physiotherapy program. Future case reports and prospective studies should provide complete diagnostic documentation, standardized and repeated outcome measurements, detailed intervention sequencing and progression, systematic functional assessment, longer follow-up, and clearer reporting of treatment modifications to improve reproducibility and strengthen the interpretation of clinical outcomes.

Conclusion

This case report described the physiotherapy management of a 72-year-old man with lumbar disc herniation who had experienced lumbar symptoms for approximately six months. The patient received four sessions of multimodal physiotherapy, each lasting approximately 75 minutes, between the initial assessment on April 29, 2026, and the final evaluation on May 4, 2026.

At the final evaluation, reductions were observed in all recorded pain outcomes. Resting pain decreased from 2 to 0, movement pain decreased from 7 to 3, and pressure pain decreased from 8 to 5 on the Visual Analog Scale. The Hamilton Rating

Scale for Anxiety score also decreased from 15 to 10, although both scores remained within the mild anxiety category according to the classification used in the original assessment. No complaints, adverse effects, or unexpected events were reported during the documented intervention period.

These findings describe temporal changes observed following multimodal physiotherapy but do not establish treatment effectiveness or a causal relationship between the intervention and the outcomes. The interpretation is limited by the single-case design, absence of a comparator, multimodal intervention, incomplete documentation of intervention progression and modification, lack of postintervention measurements for several functional outcomes, and absence of long-term follow-up.

Future studies should incorporate more complete diagnostic documentation, standardized and repeated outcome assessments, comprehensive reporting of intervention procedures and progression, systematic functional evaluation, and longer follow-up periods. Such improvements would strengthen the reproducibility and interpretation of physiotherapy outcomes in patients with lumbar disc herniation.

Author Contribution

Nur Zahra Hafifah: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft Preparation.

Yusfina Yunus: Conceptualization, Methodology, Supervision, Validation, Writing – Review and Editing.

Djohan Aras: Investigation, Clinical Data Collection, Resources, Validation, Writing – Review and Editing.

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Conflict of Interest Statement

The authors declare that they have no conflicts of interest related to this case report.

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Ethics Statement

This case report was conducted based on the available clinical documentation and did not involve any experimental intervention beyond the physiotherapy management provided as part of routine clinical care. Verbal informed consent was obtained from the patient during the initial examination and for the use of relevant clinical information in this case report. The available documentation did not include information regarding formal ethical committee approval or exemption; therefore, no additional ethical approval statement is claimed.

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