

УДК 617.559:[616.711-001.36:613.65]](048.8)

DOI: <http://dx.doi.org/10.15674/0030-59872026343-50>

Comparative analysis of the outcomes of decompressional and decompressional-stabilizing surgical interventions for lumbar intervertebral disc herniations in active military personnel

M. O. Korzh, O. V. Perfiliev

Sytenko Institute of Spine and Joint Pathology National Academy of Medical Sciences of Ukraine, Kharkiv

Decompressional and decompressional-stabilizing surgical interventions for lumbar intervertebral disc herniations have been widely studied and described in literature, primarily based on civil patient cohorts. However, outcomes obtained from the civilian population cannot be directly extrapolated to active service personnel due to differences in the nature and intensity of physical exertion—specifically regular axial loading, carrying heavy tactical gear, and the imperative for early restoration of functional capacity. Objective. To conduct a comparative analysis of the outcomes of decompressional versus decompressional-stabilizing surgical procedures for lumbar intervertebral disc herniations among military personnel and to establish optimal surgical tactics taking professional physical burdens into account. Methods. Treatment outcomes of 661 active-duty service members with lumbar disc herniations who underwent primary or revision decompressional or decompressional-stabilizing interventions were analyzed. Clinical, neurological, radiological, MRI, and functional variables were evaluated, including Visual Analog Scale (VAS) and Oswestry Disability Index (ODI). Results. Decompressional-stabilizing interventions resulted in a significantly lower recurrence rate (0.9 % vs. 18 %) and superior control over segmental stability. Conclusions. Active military personnel represent a distinct clinical subset with an elevated risk of progressive lumbar degenerative changes due to severe axial loads. Microdiscectomy provides effective decompression; however, it is associated with a higher recurrence rate (18 %) compared to decompressional-stabilizing surgeries (0.9 %). Surgical strategy must be personalized based on morphometric, biomechanical spine parameters, and expected functional exertion.

Декомпресивні та декомпресивно-стабілізувальні хірургічні втручання в разі гриж міжхребцевих дисків поперекового відділу хребта (ПВХ) широко вивчені та описані в літературі, переважно на матеріалах цивільних пацієнтів. Проте результати, отримані в цивільній популяції, не можуть бути безпосередньо перенесені на діючих військових через відмінності в характері й інтенсивності фізичних навантажень, зокрема регулярні осьові навантаження, носіння спорядження та необхідність раннього відновлення функціональної активності. Мета. Провести порівняльний аналіз результатів декомпресивних і декомпресивно-стабілізувальних втручань у разі гриж міжхребцевих дисків поперекового відділу у військових і визначити оптимальну тактику з урахуванням професійних навантажень. Методи. Проаналізовано результати хірургічного лікування 661 військових із грижами міжхребцевих дисків ПВХ, яким виконано первинні і ревізіонні декомпресивні та декомпресивно-стабілізувальні хірургічні втручання. Оцінювали клінічні, неврологічні, рентгенологічні, МРТ- та функціональні показники, зокрема VAS і ODI. Результати. Декомпресивно-стабілізувальні втручання мали нижчу частоту рецидивів (0,9 проти 18 %) і кращий контроль сегментарної стабільності. Висновки. Діючі військові є специфічною клінічною групою з підвищеним ризиком прогресування дегенеративних змін ПВХ унаслідок значних осьових навантажень. Мікродиссектомія забезпечує ефективну декомпресію, але характеризується вищою частотою рецидивів (18 %) порівняно з декомпресивно-стабілізувальними втручаннями (0,9 %). Хірургічна тактика має бути індивідуальною з урахуванням морфометричних і біомеханічних характеристик хребта й прогнозованого функціонального навантаження. Ключові слова. Декомпресивні операції, декомпресивно-стабілізувальні операції, спондилодез, грижі міжхребцевих дисків, поперековий відділ хребта.

Keywords. Decompressional surgeries, decompressional-stabilizing surgeries, spinal fusion, intervertebral disc herniation, lumbar spine

Introduction

Degenerative disorders of the lumbar spine, particularly lumbar intervertebral disc herniation, are of considerable clinical and socioeconomic importance in active-duty military personnel. Low back pain and associated radicular symptoms are common causes of reduced functional capacity and can adversely affect mobility, physical endurance, and the ability to perform military duties. Cohen et al. reported that nontraumatic spinal disorders were among the leading causes of medical evacuation of military personnel during Operations Enduring Freedom and Iraqi Freedom [1].

Active-duty service members are also exposed to prolonged axial loading while carrying equipment weighing 25–50 kg, repeated microtraumatic and vibrational stresses, and limited opportunities for recovery. Qu et al. demonstrated that load-carriage training is associated with changes in spinal function, supporting the effect of additional mechanical loading on the spine [2]. These factors distinguish military personnel from civilian patients in terms of the type and intensity of physical demands, the requirements for spinal stability and functional endurance, and the level of physical activity expected after treatment. Consequently, surgical outcomes derived predominantly from civilian populations cannot always be directly extrapolated to military personnel [2, 3, 5].

Surgical treatment of lumbar intervertebral disc herniation includes decompressive procedures and decompression combined with stabilization. Among military personnel, stabilization procedures have been associated with substantial reductions in pain; however, not all patients are able to return fully to active duty. Ikeda et al. reported that following transforaminal lumbar interbody fusion (TLIF), 52.4 % of military personnel returned to full duty, 28.6 % continued to serve with restrictions, and 19.0 % were medically separated from service [3]. These findings underscore the importance of evaluating treatment outcomes not only in terms of pain relief and resolution of neurological deficits but also in terms of the time required to regain the level of physical function necessary for military service.

In a cohort of 3,388 U.S. military personnel who underwent single-level microdiscectomy, Colantonio et al. reported same-level recurrent disc herniation in 22.8 % of cases, while 11.7 % of patients underwent revision surgery. Among these revision procedures, 30.8 % involved decompression combined with posterior instrumentation of the affected segment(s) [4].

The authors also emphasized that recurrent disc herniation does not invariably require repeat discectomy and that the choice of revision strategy should be guided by the clinical presentation and structural condition of the affected spinal motion segment.

A systematic review and meta-analysis of randomized controlled trials found that repeat microdiscectomy combined with spinal fusion in patients with recurrent lumbar disc herniation reduced the risk of recurrent herniation and segmental instability compared with repeat decompression alone at the same level. However, fusion did not demonstrate significant advantages in reducing lower-extremity pain or improving functional outcomes [5]. Repeat microdiscectomy may therefore be appropriate when segmental stability is preserved. Conversely, segmental instability, substantial loss of intervertebral disc height, foraminal stenosis, advanced degenerative changes of the facet joints, or the need for extensive revision decompression may justify adding posterior instrumentation to the affected segment(s) [5, 6].

Minimally invasive techniques can reduce surgical trauma, blood loss, postoperative pain, and hospital length of stay, but they do not offer a universal advantage across all clinical outcomes [7, 8]. Their use should be tailored to the morphological substrate of the pathology, the severity of degenerative changes, and the biomechanical status of the spinal motion segment. This consideration is particularly important in military personnel, given the need for the spine to withstand high and sustained physical loads during active service [2, 3].

Abdallah et al. reported that the risk of recurrent disc herniation is associated with a combination of morphological, radiological, and intraoperative factors. In particular, they identified associations between recurrence and specific MRI findings, including type II Modic changes and herniation morphology [9]. Accordingly, preoperative planning should involve comprehensive assessment not only of the disc herniation itself but also of intervertebral disc height, facet joint status, endplate integrity, sagittal alignment, and stability of the affected spinal motion segment.

Thus, the specific demands of military service — including substantial and sustained physical loads, load carriage, limited opportunities for recovery, and high functional demands on the spine — necessitate an individualized approach to surgical decision-making. The extent of surgery should be determined on the basis of the clinical, neurological, radiological, and biomechanical characteristics of the pathology,

as well as the risk of recurrent disc herniation and the likelihood of return to active duty [2–9].

Objective: To compare the outcomes of decompressive and decompression-plus-stabilization procedures for lumbar intervertebral disc herniation in military personnel and to determine the optimal surgical strategy in the context of occupational physical demands.

Materials and Methods

The study included the outcomes of surgical treatment in 661 military personnel aged 20–54 years who underwent surgery for primary or recurrent lumbar intervertebral disc herniation at the Sytenko Institute of Spine and Joint Pathology of the National Academy of Medical Sciences of Ukraine and the Military Medical Clinical Center of the Northern Region between January 2023 and April 2025 (Table 1). The study was approved by the local bioethics committee (protocol No. 264, dated May 25, 2026) and was conducted in accordance with the principles of the Declaration of Helsinki and the legislation of Ukraine. Written informed consent was obtained from all participants.

Clinical, neurological, radiographic, MRI, and functional outcomes were assessed, including pain intensity measured using the Visual Analog Scale (VAS) and the degree of functional disability assessed with the Oswestry Disability Index (ODI).

Among the 123 patients who underwent microdiscectomy as part of the study, approximately 70 % had a history of previous decompressive surgery for lumbar intervertebral disc herniation performed at other healthcare facilities in Ukraine. A substantial proportion of these patients were admitted with recurrent disc herniation following previous microdiscectomy and required revision surgery. The remaining approximately 30 % underwent surgery for a primary disc herniation.

Therefore, the outcomes reported in this study reflect not only the effectiveness of primary surgical treatment but also the results of revision surgery in patients who had previously undergone decompres-

sive procedures at other healthcare facilities or at earlier stages of care. This distinction should be taken into account when interpreting the reported rates of recurrence and other postoperative outcomes.

Two principal surgical approaches to the treatment of degenerative lumbar spine disorders were used in this cohort: decompression alone and decompression combined with stabilization.

Decompressive procedures, particularly microdiscectomy, are minimally invasive and involve less surgical trauma, generally allowing faster postoperative recovery. Their primary objective is to relieve neural compression by removing the herniated disc material [5, 7, 8]. Long-term outcomes of microdiscectomy in civilian populations demonstrate high effectiveness; however, recurrent disc herniation occurs in approximately 10–20 % of cases [7, 8].

At the same time, decompression alone does not provide stabilization of the affected spinal motion segment. In the setting of the high physical demands characteristic of military service, this may contribute to segmental instability and increase the risk of recurrent symptoms and other complications. This concern is supported by studies of military personnel, in whom recurrence rates may be higher because of an early return to strenuous physical activity [5].

Decompression combined with stabilization involves neural decompression together with restoration and maintenance of stability of the affected spinal segment. These procedures include transpedicular spinal fixation (TSF) with interbody fusion, such as posterior lumbar interbody fusion (PLIF) or transforaminal lumbar interbody fusion (TLIF), with the use of autologous or allogeneic bone grafts. This approach can restore intervertebral disc height, improve segmental biomechanics, optimize load distribution, and reduce pathological motion [2, 9].

Although this approach is more invasive and generally requires a longer rehabilitation period, it provides greater mechanical stability and may reduce the risk of recurrent neural compression. Accordingly, it may be particularly appropriate for patients

Table 1

Distribution of patients by age and type of surgical intervention

Age group (years)	Total number of patients, n (%)	Microdiscectomy, n (%)	Decompression-stabilization procedures, n (%)
20–29	198 (30.0)	52 (26.3)	146 (73.7)
30–39	267 (40.4)	48 (18.0)	219 (82.0)
40–49	156 (23.6)	18 (11.5)	138 (88.5)
50–54	40 (6.0)	5 (12.5)	35 (87.5)
Total	661 (100)	123 (18.6)	538 (81.4)

with evidence of segmental instability or high functional demands, including military personnel [2, 9].

Results

In our cohort, postoperative complications occurred in 18 % of patients following microdiscectomy compared with 0.9 % following decompression combined with stabilization. This corresponds to an approximately 20-fold lower observed complication rate in the stabilization group. Distinct patterns were also identified with respect to the type and timing of complications, particularly recurrent disc herniation, as well as their distribution across age groups (Tables 2 and 3).

Following microdiscectomy, recurrent disc herniation occurred predominantly during the early postoperative period, particularly within 1–3 months after surgery, coinciding with the phase of increasing physical activity and resumption of axial loading. In contrast, recurrences following decompression combined with stabilization were rare and occurred predominantly during the early postoperative period. Most were related to technical factors involving the instrumentation or to adjacent spinal segments.

A statistically significant difference in the frequency of postoperative complications was observed between the two groups ($\chi^2 = 69.21$; $df = 1$; $p < 0.001$), with complications occurring significantly more frequently following microdiscectomy than following decompression combined with stabilization.

Within the microdiscectomy group, no statistically significant association was found between patient age and the frequency of complications ($\chi^2 = 0.49$; $df = 3$; $p = 0.921$). Similarly, no significant association between age and complication frequency was identified

in the decompression-plus-stabilization group ($\chi^2 = 0.83$; $df = 3$; $p = 0.843$).

The observed data showed a gradual increase in the frequency of recurrent disc herniation with age across both treatment groups. Following microdiscectomy, the recurrence rate increased from 15 % among patients aged 20–29 years to 25 % among those older than 50 years. A similar but substantially less pronounced pattern was observed following decompression combined with stabilization, with recurrence rates increasing from 0.5 % to 2.0 %.

At the same time, it is of fundamental importance that the relative difference between the treatment methods was maintained across all age groups and remained substantial, ranging from approximately 15- to 25-fold. This suggests that age affects the overall risk of degenerative changes but does not alter the fundamental advantage of decompressive-stabilizing procedures in preventing recurrence.

Thus, the obtained data suggest that the key determinant of recurrence risk is not the patient's chronological age but rather the biomechanical condition of the spinal motion segment and the nature of postoperative loading.

Analysis of the temporal pattern of recurrences demonstrated a pronounced peak in their occurrence during the 1–3-month period after surgery, coinciding with the phase of active recovery of physical activity and patients' return to military and occupational workloads. This interval may be considered a critical biomechanical window characterized by the combination of several unfavorable factors: incomplete structural adaptation of the operated disc or spinal motion segment, insufficient recovery of the stabilizing function of the paravertebral musculature, and

Incidence of complications according to the type of surgical intervention and their causes

Table 2

Type of surgery	Complication rate, %	Typical time of onset	Main causes / complications
Microdiscectomy	18 (22 cases)	1–3 months	Recurrent root compression; epidural scar and adhesion formation; segmental instability
Decompression-stabilization procedures (TSF + MD / PLIF)	0.9 (5 cases)	Early postoperative months	Fixation failure; screw or rod breakage; adjacent segment pathology; epidural scar and adhesion formation

Incidence of complications by age

Table 3

Age group (years)	Microdiscectomy, n (%)	Decompression-stabilization procedures, %
20–29	15	0.5
30–39	18	0.9
40–49	21	1.2
50+	25	2.0

a simultaneous rapid increase in axial, rotational, and compressive loads. Collectively, these factors create a period of maximal biomechanical vulnerability of the segment, which may account for the highest recurrence rate during this time interval.

Pearson correlation analysis demonstrated a negative association between time since surgery and pain intensity in all study groups. The least stable dynamics were observed after microdiscectomy ($r = -0.305$; $p = 0.695$), with a subsequent increase in VAS scores during the late postoperative period, which may have been associated with the development of segmental instability and recurrent intervertebral disc herniation. In contrast, decompressive-stabilizing procedures demonstrated a more pronounced negative correlation: TSF + MD, $r = -0.590$; $p = 0.410$, and TSF + MD + PLIF/TLIF, $r = -0.582$; $p = 0.418$, suggesting a more stable and sustained reduction in pain following stabilization of the spinal motion segment.

A substantial reduction in pain intensity was observed in all groups during the early postoperative period, confirming the effectiveness of neural decompression irrespective of the type of surgical intervention. However, the subsequent dynamics differed between treatment groups. After microdiscectomy, a tendency toward a recurrence of pain was observed at 3–6 months, reaching 3.4–3.9 points on the VAS. This was associated with the development of spinal motion segment instability and recurrence of the compression syndrome. In contrast, after decompressive-stabilizing procedures, pain levels remained consistently low, at approximately 2 points on the VAS, without substantial deterioration over time.

The most pronounced clinical effect was observed after decompressive-stabilizing procedures combined with PLIF/TLIF, which demonstrated the fastest reduction in pain intensity and earlier patient mobili-

zation, manifested by more rapid recovery of walking ability and functional activity due to restoration of biomechanical stability of the spinal motion segment. No statistically significant correlations were identified ($p > 0.05$), which was probably related to the limited number of observation time points.

Pearson correlation analysis demonstrated a pronounced negative association between time since surgery and the degree of functional impairment according to the ODI in all study groups, indicating improvement in patients' functional status over the observation period. After microdiscectomy, the correlation coefficient was $r = -0.978$ ($p = 0.134$); after decompressive-stabilizing procedures, TSF + MD, $r = -0.997$ ($p = 0.051$); and after TSF + MD + PLIF/TLIF, $r = -0.999$ ($p = 0.028$), corresponding to the most stable and sustained functional recovery.

All groups demonstrated statistically significant improvement in functional status at 3 months after surgery ($p < 0.001$); however, subsequent dynamics depended on the surgical strategy. After microdiscectomy, ODI decreased from 54 ± 6 to 28 ± 5 at 3 months, but a partial loss of the achieved effect was observed during the later follow-up period, with ODI reaching 24 ± 6 at 6 months. This was associated with the development of spinal motion segment instability and recurrent disc herniation.

In contrast, functional outcomes after decompressive-stabilizing procedures were more stable, with no tendency toward deterioration during the late postoperative period. The best results were recorded after TSF + MD + PLIF/TLIF, with ODI decreasing to 18 ± 3 at 3 months and to 15 ± 3 at 6 months. Comparative analysis of VAS and ODI demonstrated that all techniques provided an early clinical effect; however, stabilizing procedures resulted in a more predictable long-term functional response by eliminating

Table 4

Changes in pain intensity (VAS, points)

Intervention group	Before operation	Early post-operative period	3 months	6 months
Microdiscectomy	6.8 ± 0.7	2.1 ± 0.5	3.4 ± 0.6	3.9 ± 0.8
Decompression-stabilization procedures (TSF + MD)	6.7 ± 0.6	1.8 ± 0.4	2.0 ± 0.5	2.1 ± 0.4
Decompression-stabilization procedures (PLIF/TLIF)	6.9 ± 0.8	1.5 ± 0.3	1.8 ± 0.4	1.9 ± 0.3

Table 5

Changes in functional status (ODI, %)

Intervention group	Before operation	3 months	6 months
Microdiscectomy	54 ± 6	28 ± 5	24 ± 6
Decompression-stabilization procedures (TSF + MD)	55 ± 7	22 ± 4	18 ± 4
Decompression-stabilization procedures (PLIF/TLIF)	56 ± 6	18 ± 3	15 ± 3

pathological micromotion and restoring biomechanical stability of the spinal motion segment.

Segmental instability following microdiscectomy was identified in 33 % of cases during the 1–3-month postoperative period and was considered one of the key factors contributing to poorer long-term outcomes. Its development was accompanied by mechanical pain, reduced tolerance to axial loading, and deterioration of functional outcomes during the late postoperative period.

Discussion

The recurrence rate observed in our study after microdiscectomy was higher than or close to the upper range of rates reported in the contemporary literature. In particular, in a large cohort of U.S. military personnel comprising 3,388 patients who underwent single-level microdiscectomy, the recurrence rate of disc herniation at the same level was 22.8 %, whereas repeat surgery was required in 11.7 % of cases. Of these revision procedures, 69.2 % were repeat microdiscectomy and 30.8% consisted of decompression combined with segmental stabilization. Thus, our findings are consistent with those reported by D. Colantonio et al. and confirm that recurrent disc herniation following decompressive procedures represents a particularly important clinical issue in military personnel [4].

The recurrence rate observed after microdiscectomy in our study is also consistent with the concept of the multifactorial nature of this complication. In a prospective study of 816 patients, A. Abdallah et al. demonstrated that the risk of recurrence is associated not only with the performance of discectomy but also with the morphological characteristics of the intervertebral disc. In particular, Modic type II changes and specific morphological patterns of disc herniation were associated with both early and late recurrence. At the same time, it is important to distinguish between the concepts of “disc herniation recurrence” and “the need for repeat surgery”. Detection of recurrent disc herniation on MRI alone does not constitute an absolute indication for revision surgery. The need for revision intervention should be determined based on clinical symptoms, neurological status, the degree of neural structure compression, and the structural and functional condition of the affected spinal motion segment [9].

In our cohort of military personnel, recurrence after microdiscectomy occurred in 18 % of cases, predominantly within 1–3 months after surgery. This rate may be related to the combination of degenerative changes in the operated segment and the substantial physical demands characteristic of military ser-

vice. An important finding was the presence of signs of segmental instability in 33 % of patients after microdiscectomy, accompanied by recurrent worsening of pain during the late postoperative period. The biomechanical rationale for the influence of physical loading is provided by the study of H. Qu et al. [2], in which load-carriage training in military personnel was associated with decreased intervertebral disc height, narrowing of the intervertebral foramina, and changes in lumbar lordosis. These findings support the consideration of the first few months after microdiscectomy as a period of increased mechanical vulnerability of the operated segment.

The results reported by C. Santos et al. in a meta-analysis of four randomized controlled trials involving 596 patients demonstrated an advantage of spinal fusion for recurrent disc herniation in terms of low back pain, recurrent herniation (RR 0.10; 95 % CI: 0.02–0.54), and postoperative instability (RR 0.11; 95 % CI: 0.02–0.63), with no significant differences in leg pain or functional recovery [5]. A similar pattern was observed in our study. Following microdiscectomy, ODI decreased from 54 ± 6 % to 28 ± 5 % at 3 months and to 24 ± 6 % at 6 months. After decompressive-stabilizing procedures, the corresponding values were lower: 22 ± 4 % and 18 ± 4 % after TSF + MD, and 18 ± 3 % and 15 ± 3 % after TSF + MD + PLIF/TLIF, respectively. Thus, stabilization was associated with more pronounced and sustained functional recovery.

Evidence from revision surgery also supports a differentiated treatment approach. M. Durmaz et al. [6] found that both repeat decompression and stabilization resulted in clinical improvement; however, the advantages of stabilization were more evident during long-term follow-up, while stabilization did not guarantee complete recovery of functional capacity sufficient for unrestricted military duty. According to D. Ikeda et al. [3], following lumbar spinal fusion, 52.4 % of military personnel returned to active duty without restrictions, 28.6 % continued service with restrictions, and 19.0 % were medically discharged. Thus, clinical success of surgery does not necessarily correspond to complete restoration of physical work capacity.

Therefore, segmental instability, the need for a short recovery period, and the potential for early axial loading and return to military duty after decompressive procedures are among the key criteria that should be considered when individually selecting a surgical strategy for military personnel.

Statistical Analysis

The study employed methods of descriptive and analytical statistics. Quantitative data are presented

as $M \pm SD$ or Me (IQR), depending on the distribution characteristics, which were assessed using the Shapiro–Wilk test. For between-group comparisons, Student's t-test or the Mann–Whitney U test was used; for categorical variables, Pearson's χ^2 test or Fisher's exact test was applied. Changes in parameters at different time points were assessed using repeated-measures analysis of variance (repeated-measures ANOVA) or the Friedman test. Differences were considered statistically significant at $p < 0.05$.

Conclusions

Active-duty military personnel represent a specific clinical group with an increased risk of progression of degenerative changes in the lumbar intervertebral discs during the perioperative period, which is attributable to substantial and prolonged axial loads associated with their professional activities.

Microdiscectomy provides effective decompression of neural structures; however, in military personnel, it is associated with a higher incidence of recurrent intervertebral disc herniation (18 %) and the development of segmental instability, whereas decompression-stabilization procedures are characterized by a lower recurrence rate (0.9 %) and more stable functional outcomes according to VAS and ODI scores.

Optimization of surgical strategy in military personnel requires an individualized approach that takes into account spinal morphometric and biomechanical characteristics, the expected level of subsequent functional loading, and the likelihood of return to military service.

Conflict of Interest. The authors declare no conflict of interest.

Prospects for Further Research. The findings indicate a complex set of factors contributing to repeat surgery in active-duty military personnel. Further research will focus on improving treatment outcomes through individualization of the surgical strategy, taking into account the specific characteristics of physical loading during the postoperative period.

Funding Information. No benefit of any kind has been or will be received.

Author Contributions. M. O. Korzh and O. V. Perfiliev made equal contributions to the study design, data collection and analysis, and manuscript preparation.

References

1. Cohen, S. P., Brown, C., Kurihara, C., Plunkett, A., Nguyen, C., & Strassels, S. A. (2010). Diagnoses and factors associated with medical evacuation and return to duty for service members participating in operation Iraqi freedom or operation enduring freedom: A prospective cohort study. *The lancet*, 375(9711), 301–309. [https://doi.org/10.1016/s0140-6736\(09\)61797-9](https://doi.org/10.1016/s0140-6736(09)61797-9)
2. Qu, H., Yu, L., Wu, J., Liu, G., Liu, S., Teng, P., Ding, L., & Zhao, Y. (2020). Spine system changes in soldiers after load carriage training in a plateau environment: A prediction model research. *Military medical research*, 7(1). <https://doi.org/10.1186/s40779-020-00293-1>
3. Ikeda, D. S., Meister, M., Porensky, P., Yokoi, H., & Ravindra, V. M. (2022). Lumbar fusion for active duty service members performed at an overseas military treatment facility: A 2-Year retrospective analysis. *Military medicine*, 188(7–8), e1763–e1769. <https://doi.org/10.1093/milmed/usac193>
4. Colantonio, D. F., Fredericks, D. R., Elsenbeck, M. J., Cady, C., Schlaff, C. D., Christensen, D. L., Helgeson, M. D., & Wagner, S. C. (2024). Recurrent lumbar disk Herniation and revision surgery rates after single-level lumbar Microdiscectomy in the military population. *Journal of the American academy of orthopaedic surgeons*, 33(18), 1040–1047. <https://doi.org/10.5435/jaaos-d-24-00879>
5. Santos, C., Lobo, K., Campos, P., Oliveira, L., & Da Silva, V. E. (2025). Efficacy of repeat discectomy alone versus with spinal fusion in recurrent lumbar disc herniation: A systematic review and meta-analysis of randomized studies. *Neurosurgical review*, 48(1). <https://doi.org/10.1007/s10143-025-03555-5>
6. Durmaz, M. O., Ezgü, M. C., Kaplan, A., & Doğan, A. (2023). Recurrent lumbar disk herniations: The efficacy of re-operation. *Journal of Turkish spinal surgery*, 34(3), 87–93. <https://doi.org/10.4274/jtss.galenos.2023.21939>
7. Skovrlj, B. (2015). Minimally invasive procedures on the lumbar spine. *World journal of clinical cases*, 3(1), 1. <https://doi.org/10.12998/wjcc.v3.i1.1>
8. Liu, S., Zhang, X., Xiong, Y., & He, H. (2025). Minimally invasive surgery for lumbar disc herniation: A meta-analysis of efficacy and safety. *International journal of surgery*, 111(8), 5623–5636. <https://doi.org/10.1097/js9.0000000000002434>
9. Abdallah, A., & Güler Abdallah, B. (2022). Factors associated with the recurrence of lumbar disk herniation: Non-biomechanical–radiological and intraoperative factors. *Neurological research*, 45(1), 11–27. <https://doi.org/10.1080/01616412.2022.2116525>

The article has been sent to the editors 15.06.2026	Received after review 20.07.2026	Accepted for printing 24.07.2026
--	-------------------------------------	-------------------------------------

COMPARATIVE ANALYSIS OF THE OUTCOMES OF DECOMPRESSIONAL AND DECOMPRESSIONAL-STABILIZING SURGICAL INTERVENTIONS FOR LUMBAR INTERVERTEBRAL DISC HERNIATIONS IN ACTIVE MILITARY PERSONNEL

M. O. Korzh, O. V. Perfiliev

Sytenko Institute of Spine and Joint Pathology National Academy of Medical Sciences of Ukraine, Kharkiv

✉ Mykola Korzh, MD, Prof. in Traumatology and Orthopaedics: mykola.korzh47@gmail.com; <https://orcid.org/0000-0002-0489-3104>

✉ Oleksandr Perfiliev, MD, PhD: perfilevoleksandr@gmail.com