Retrospective Chart Review of Nonsurgical Spinal Decompression as a Therapeutic Modality for Low Back Pain

Shannon Schueren[1,2]; Lauren A. Luginsland[1,2]; Gina Ariza Medina[2,3]; Nathan D. Schilaty[1,2,3]

ABSTRACT

Introduction:

Low back pain (LBP) is a leading cause of disability and health care costs worldwide. Despite its prevalence, many patients fail to respond to surgical interventions and often face opioid dependency. Nonsurgical spinal decompression (NSSD) is a conservative treatment that may alleviate LBP by decompressing intervertebral discs, but it remains underutilized as a result of limited evidence and lack of insurance coverage.

Methods:

This retrospective chart review aimed to evaluate the effectiveness of NSSD and LBP outcomes, including pain intensity, neurological function, and activities of daily living (ADLs) from community clinics nationwide. A total of 267 patient records from 7 clinics were analyzed. Patients underwent ≥20 NSSD sessions for over 6 to 8 weeks, with a median of 2 treatments per week. Demographics, subjective pain scores, clinical examination (reflex, myotome, and dermatome tests), and ADLs were collected. Statistical analyses included McNemar's, matched pairs *t*-tests, and subgroup analyses using a Kruskal-Wallis test of duration of current LBP.

Results:

The cohort demonstrated significant improvements in all measured outcomes. Pain scores were decreased by an average of 4.4 points (from 6.9 to 2.5; $P < .001$), with 90.5% of patients reporting pain reduction. Reflexes, myotomes, and dermatomes showed improvements of 60.9%, 74.8%, and 77.6%, respectively. ADLs improved significantly, with odds ratios ranging from 4.0 to 40.7 ($P < .001$). Subgroup analyses revealed consistent benefits across different chronicity levels of LBP.

Conclusion:

These findings suggest NSSD is an effective conservative treatment for a diverse population with LBP, addressing pain, neurological deficits, and functional impairments. NSSD may offer a cost-effective alternative to surgical interventions and pharmacological treatments, reducing the risks of opioid dependency and surgical complications. Future studies should include randomized controlled trials and long-term follow-ups to further validate these results. This study emphasizes NSSD as a first-line therapy for LBP, warranting broader adoption and coverage to improve patient outcomes and reduce health care costs.

INTRODUCTION

Low back pain (LBP) is one of the most prevalent spinal conditions worldwide, impacting millions and contributing a considerable portion of health care expenses and productivity losses, with annual U.S. financial burden at approximately $980B annually (5.8% of the Gross Domestic Product).[1,2] LBP accounts for one of the highest incidence medical conditions that contributes to disability, decreased activities of daily living (ADL), decreased quality of life, and inability to work (United States and worldwide).[1,3] In fact, of all diseases and injuries that contribute to disability-adjusted life years in the United States, LBP ranks third.[4] LBP affects approximately 70 to 85% of people during their lifetime,[5,6] with approximately 20% becoming chronic (age 20-59 years).[5] LBP has been the leading cause of disability for numerous decades.[7] Furthermore, many chronic musculoskeletal pain patients, especially with LBP, do not respond to surgery[8] and many develop dependence on opioids.[9]

As a result of the physical demands of military service, Armed Forces personnel often bear the brunt of chronic pain conditions.[10] Veterans are more likely to have LBP (32.8%) and experience pain at younger ages compared to nonveterans.[10] LBP among active duty Soldiers is 40.5 per 1,000 person-years,[6] a rate 2× higher than the civilian population.[10] This number is likely underreported as active duty Soldiers may not report injuries for fear that the injury might affect future career opportunities and mandated physical restrictions.[11] Musculoskeletal conditions and injuries are

[1]Department of Neurosurgery & Brain Repair, University of South Florida, Tampa, FL 33606, United States

[2]Center for Neuromusculoskeletal Research, University of South Florida, Tampa, FL 33620, United States

[3]Department of Medical Engineering, University of South Florida, Tampa, FL 33620, United States

1. Poster: USF Research Day 2024. University of South Florida, Tampa, FL, February 2024.

2. *Poster*: MHSRS 2024. Orlando, FL, August 26-29, 2024.

Corresponding author: Nathan D. Schilaty, DC, PhD (nschilaty@usf.edu).

doi:https://doi.org/10.1093/milmed/usaf116

© The Association of Military Surgeons of the United States 2025. All rights reserved. For commercial re-use, please contact reprints@oup.com for reprints and translation rights for reprints. All other permissions can be obtained through our RightsLink service via the Permissions link on the article page on our site–for further information please contact journals.permissions@oup.com.

Downloaded from https://academic.oup.com/milmed/article/190/Supplement_2/134/8256266 by guest on 14 January 2026