LINK MEDICAL INTERFACE

JHWCR

Journal of Health, Wellness, and Community Research
Volume III, Issue I
Open Access, Double Blind Peer Reviewed.
Web: https://jhwcr.com, **ISSN**: 3007-0570
DOI: https://doi.org/10.61919/7fxkss54

Article

Comparison of Kinesiophobia and Disability Among Lower Back Pain Patients with or Without Weightlifting Practices

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Cite this Article

Received	2025-03-07
Revised	2025-03-23
Accepted	2025-03-26
Published	2025-03-28
Authors' Contributions	WI, ZN, OT: concept, design, data collection; RA, FK: analysis, interpretation; ZT: manuscript drafting and revision.
Conflict of Interest	None declared
Data/supplements	Available on request.
Funding	None
Ethical Approval	Respective Ethical Review Board
Informed Consent	Obtained from all participants
Study Registration	
Acknowledgments	N/A

ABSTRACT

Background: Low back pain (LBP) is a prevalent musculoskeletal condition with significant global health implications. While physical activity is generally advocated for its management, the psychological impact of exercise, particularly weightlifting, on disability and fear-avoidance beliefs in LBP remains underexplored in the Pakistani context. **Objective**: To compare kinesiophobia and functional disability levels among individuals with chronic non-specific LBP who engage in regular weightlifting versus those with sedentary lifestyles, assessing whether structured resistance training offers protective or changing effects. **Methods**: This comparative cross-sectional study included 308 participants aged 20–50 years (n = 155 weightlifters; n = 153 sedentary). Inclusion criteria were non-specific LBP ≥3 months, while those with spinal surgery, deformities, pregnancy, or neurological conditions were excluded. Data were collected via structured interviews using the Oswestry Disability Index (ODI), Fear-Avoidance Beliefs Questionnaire (FABQ-Brazil), and Back Pain and Body Posture Evaluation Instrument (BackPEI-A). Ethical approval was obtained from the Institutional Review Board [IRB no.], and procedures followed the Helsinki Declaration. Statistical analysis was conducted using SPSS v27, employing independent t-tests and Chi-square tests. **Results**: Weightlifters reported significantly lower mean ODI scores (18.3 ± 11.6 vs. 27.6 ± 14.2; $p < 0.001$) and lower kinesiophobia prevalence (7.1% vs. 14.9%; $p = 0.013$). Mild pain was more frequent among weightlifters (55.1%) compared to sedentary individuals (15.6%). **Conclusion**: Regular weightlifting is associated with reduced disability and fear-avoidance behavior in individuals with LBP, supporting its integration into rehabilitation protocols to enhance psychological and functional outcomes in musculoskeletal healthcare.

Keywords: Low Back Pain, Kinesiophobia, Weightlifting, Disability Evaluation, Fear-Avoidance Beliefs, Resistance Training, Physical Rehabilitation

INTRODUCTION

Low back pain (LBP) is one of the most prevalent and debilitating musculoskeletal conditions affecting populations worldwide, often leading to significant functional limitations and reduced quality of life. Defined as discomfort or pain localized between the costal margins and the gluteal folds, LBP may occur with or without radiating leg pain and is typically categorized based on duration as acute, subacute, or chronic (1). Globally, the burden of LBP continues to rise, with estimates indicating that up to 84% of individuals experience at least one episode during their lifetime, and a considerable proportion develop chronic symptoms (2). This widespread prevalence not only imposes a substantial burden on healthcare systems but also impacts economic productivity and psychosocial well-being (3). Among the multiple risk factors associated with LBP—such as age, gender, body weight, occupational demands, and psychosocial stressors—psychological components like kinesiophobia have emerged as significant contributors to the chronicity and severity of the condition (4).

Kinesiophobia, defined as the excessive and irrational fear of physical movement due to a perceived risk of injury or re-injury, is increasingly recognized as a psychological barrier in LBP rehabilitation. Individuals with heightened kinesiophobia tend to avoid physical activity, leading to physical deconditioning and further disability (5). Conversely, self-efficacy and positive behavioral beliefs may serve as protective factors, improving outcomes in LBP management (6). In this context, the role of physical activity becomes complex. While regular exercise is

generally advocated as a preventive and therapeutic strategy, the impact of specific exercise modalities, such as weightlifting, on kinesiophobia and disability among individuals with LBP remains underexplored. Strength training, though beneficial for musculoskeletal conditioning, may pose mechanical stress on the lumbar spine, particularly when performed without proper technique or guidance (7). Nonetheless, structured exercise regimens are also associated with improved functional outcomes and reduced fear-avoidance behaviors, potentially mitigating the psychological and functional impairments of LBP (8).

Previous research has highlighted a paradox: although athletes and individuals engaged in high-intensity training often report a higher prevalence of LBP, they may exhibit lower levels of disability and psychological distress compared to sedentary individuals (9). This duality suggests that habitual physical exertion might induce a level of psychological resilience and pain tolerance not observed in inactive populations. However, existing literature is inconclusive, with studies focusing largely on Western populations, and limited data is available from South Asian countries like Pakistan. Furthermore, the interplay between kinesiophobia and disability in the context of lifestyle differences—specifically between individuals who engage in weightlifting and those leading sedentary lives—has not been adequately studied in this regional context. This knowledge gap is particularly relevant as the popularity of recreational strength training is on the rise among urban youth, and understanding its implications on LBP management could inform both preventive strategies and therapeutic interventions.

Therefore, this study aims to compare the levels of kinesiophobia and functional disability among individuals with chronic non-specific LBP who either participate in regular weightlifting or maintain a sedentary lifestyle. The objective is to assess whether weightlifting, as a structured form of physical activity, has a protective or risk-modifying effect on psychological and functional outcomes in LBP patients. By addressing this gap, the research seeks to contribute evidence that could guide clinicians and rehabilitation specialists in tailoring exercise-based interventions. The central hypothesis is that individuals with LBP who engage in weightlifting will exhibit lower levels of kinesiophobia and disability compared to those who are sedentary.

MATERIAL AND METHODS

This study employed a comparative cross-sectional observational design to assess differences in kinesiophobia and functional disability among individuals with chronic non-specific low back pain (LBP), stratified by physical activity level—specifically weightlifting versus a sedentary lifestyle. A total of 308 participants aged between 20 and 50 years were recruited using convenience sampling from multiple urban locations in Lahore and Muridke, Pakistan. Individuals were assigned to two groups based on self-reported exercise habits: Group A comprised regular weightlifters (engaging in structured resistance training at least three times per week for a minimum of three consecutive months), while Group B consisted of sedentary individuals with no regular physical activity. Inclusion criteria were a clinical history of non-specific LBP for more than three months, age between 20 and 50 years, and the ability to understand and complete self-reported questionnaires. Exclusion criteria included any history of spinal surgery or trauma, congenital or acquired spinal deformities, radiculopathy, systemic musculoskeletal or neurological disorders, pregnancy, or recent involvement in any rehabilitation program for LBP. Prior to data collection, all participants provided written informed consent after being briefed on the study's aims and procedures. Ethical approval was obtained from the Institutional Review Board of [Insert Institution Name], with the approval number [Insert IRB number], and all procedures were conducted in accordance with the ethical principles outlined in the Declaration of Helsinki.

Data were collected over a three-month period through structured face-to-face interviews and self-administered questionnaires. The primary outcomes of the study were levels of kinesiophobia and functional disability, while the secondary outcome was the risk of pain-related postural habits. Three validated assessment tools were used: (1) the Oswestry Disability Index (ODI), a ten-item instrument measuring perceived functional limitations due to LBP; (2) the Fear-Avoidance Beliefs Questionnaire – Brazil version (FABQ-Brazil), which assesses fear-related beliefs concerning physical activity and work, with cut-off values >15 (physical activity subscale) and >34 (work subscale) indicative of high kinesiophobia; and (3) the Back Pain and Body Posture Evaluation Instrument (BackPEI-A), which evaluates behavioral and postural risk factors, with scores ≤4 indicating higher pain risk. The FABQ-Brazil, originally developed in Portuguese, was forward-translated and linguistically adapted to the local context by bilingual experts, though no formal validation study was conducted for the Pakistani population. The use of validated tools with clear operational cut-offs ensured reproducibility and comparability with other international studies (1). Participants completed the questionnaires in supervised sessions to minimize response bias, and demographic data, including age, gender, and body weight, were also recorded.

Data were entered and analyzed using IBM SPSS Statistics version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize categorical and continuous variables. Between-group differences were assessed using independent-samples t-tests for continuous variables and Chi-square tests for categorical data. A p-value of less than 0.05 was considered statistically significant. Confidence intervals for the primary outcomes were calculated where applicable to enhance interpretability. Missing data were minimal and handled using listwise deletion, as no imputation techniques were deemed necessary due to the high rate of data completeness. Potential confounding variables such as age and gender distribution were considered during analysis, but no multivariable adjustments or sensitivity analyses were performed given the study's cross-sectional nature and uniformity of group inclusion criteria. Anonymity was preserved by assigning unique identifiers to all participants, and personal data were stored securely with restricted access.

  DOI: https://doi.org/10.61919/7fxkss54

RESULTS

A total of 308 participants were included in the final analysis, with 155 individuals in the weightlifting group (Group A) and 153 individuals in the sedentary group (Group B). The mean age of participants in Group A was 23.33 ± 6.23 years, while Group B had a higher mean age of 26.93 ± 9.09 years. The average weight was slightly greater in Group A (66.81 ± 11.64 kg) compared to Group B (64.58 ± 16.42 kg). The gender distribution revealed a significant imbalance, with males comprising 82.47% of the weightlifting group and females dominating the sedentary group (60.39%), suggesting a possible gender-related bias that may influence outcomes.

Table 1. Gender Distribution Between Groups

Gender	Weightlifting Group (n=154)	Sedentary Group (n=154)
Male	127 (82.5%)	61 (39.6%)
Female	27 (17.5%)	93 (60.4%)

Table 2. Descriptive Statistics of Age and Weight

Group	Mean Age ± SD	Mean Weight ± SD
Weightlifting Group	23.33 ± 6.23 years	66.81 ± 11.64 kg
Sedentary Group	26.93 ± 9.09 years	64.58 ± 16.42 kg

Pain intensity was assessed using the Visual Analogue Scale (VAS). The majority of participants in Group A reported mild pain (55.1%), while moderate and severe pain were more frequently reported in the sedentary group (50.6% and 33.8%, respectively), indicating statistically significant differences in perceived pain severity (χ^2 = 34.85, p < 0.001). These findings suggest that regular participation in weightlifting may be associated with reduced pain intensity despite the presence of LBP.

Table 3. Comparison of Pain Intensity (VAS)

Pain Intensity	Weightlifting Group (n=154)	Sedentary Group (n=154)
Mild	85 (55.1%)	24 (15.6%)
Moderate	39 (25.3%)	78 (50.6%)
Severe	30 (19.5%)	52 (33.8%)
$\chi^2 = 34.85$, $p < 0.001$		

The Oswestry Disability Index (ODI) scores further highlighted significant differences in functional disability. Group A demonstrated better functional outcomes, with 29.9% reporting no disability and 47.4% experiencing mild disability. Conversely, moderate and severe disability were more prevalent in the sedentary group. One participant in Group B also reported complete disability, while none were observed in Group A. The mean ODI score in the weightlifting group was significantly lower (18.3 ± 11.6) compared to the sedentary group (27.6 ± 14.2), with an independent-samples t-test confirming statistical significance (t = -6.34, p < 0.001).

Table 4. Oswestry Disability Index (ODI) Categories

Disability Level	Weightlifting Group (n=154)	Sedentary Group (n=154)
No disability	46 (29.9%)	17 (11.0%)
Mild disability	73 (47.4%)	71 (46.1%)
Moderate disability	27 (17.5%)	46 (29.9%)
Severe disability	8 (5.2%)	19 (12.3%)
Complete disability	0 (0%)	1 (0.6%)
t = -6.34, p < 0.001		

The FABQ-Brazil physical activity subscale was used to assess fear-avoidance beliefs. In Group A, 92.9% of participants scored within the decreased kinesiophobia risk category, whereas 14.9% of the sedentary group scored within the increased risk category. The group difference was statistically significant (χ^2 = 6.21, p = 0.013), reinforcing the hypothesis that regular weightlifting may reduce fear-avoidant behavior in individuals with chronic LBP.

Table 5. Fear-Avoidance Beliefs Questionnaire (FABQ - Physical Activity Subscale)

FABQ Risk Level	Weightlifting Group (n=154)	Sedentary Group (n=154)
Decreased risk	143 (92.9%)	131 (85.1%)
Increased risk	11 (7.1%)	23 (14.9%)
$\chi^2 = 6.21$, $p = 0.013$		

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In terms of the BackPEI-A assessment, individuals in Group A had significantly better postural habits and a lower cumulative pain risk score. A larger proportion of sedentary participants were categorized in the higher-risk group (BackPEI ≤ 4), suggesting that weightlifting practices may be associated with improved postural awareness and ergonomics.

The overall trend across all measured variables indicated that individuals engaged in regular weightlifting reported lower levels of pain intensity, disability, and kinesiophobia compared to their sedentary counterparts. While the prevalence of LBP was comparable between the groups, the functional and psychological outcomes were notably better among those with structured physical activity. No unexpected results were observed, though the strong gender skew within the groups may have influenced specific responses, particularly in pain perception and fear-avoidant tendencies. These results emphasize the potential protective and rehabilitative role of weightlifting and structured exercise in individuals with chronic LBP.

DISCUSSION

The findings of this study demonstrate that individuals with chronic non-specific low back pain (LBP) who engage in regular weightlifting exhibit significantly lower levels of kinesiophobia and functional disability compared to their sedentary counterparts. Despite a comparable presence of LBP in both groups, the weightlifting group reported higher frequencies of mild pain and more favorable scores on the Oswestry Disability Index (ODI) and the Fear-Avoidance Beliefs Questionnaire (FABQ), suggesting that structured physical activity may offer both physical and psychological resilience against LBP-related impairments. These results support the growing body of literature that highlights the multifaceted role of exercise in pain modulation and functional improvement, particularly in chronic musculoskeletal conditions (1).

The association between physical activity and improved psychological outcomes in LBP has been extensively discussed in prior research. Da Silva et al. found that individuals with consistent exercise habits proved significantly lower levels of Kinesiophobia and disability, emphasizing the behavioral adaptations and cognitive restructuring that occur with routine physical exertion (2). Our study aligns with this observation, further suggesting that weightlifting—a form of resistance training—may serve as a protective modality not only by enhancing musculoskeletal strength but also by attenuating maladaptive pain beliefs. Similarly, Mishra and Naik reported that self-efficacy plays a mediating role in reducing disability among elderly patients with chronic LBP, reinforcing the interplay between physical conditioning and psychological resilience (3).

Interestingly, although prior literature has expressed concern over the risk of LBP in athletes and strength-training individuals due to repetitive mechanical loading, our findings suggest that when performed regularly and under structured conditions, weightlifting may, in fact, be associated with reduced severity of disability and fear-avoidant behaviors. This aligns with the findings of Sadenghisani, who observed that physically active individuals with LBP showed better functional capacity and reduced fear-avoidance than sedentary patients (4). However, discrepancies exist within the literature. Fares et al. noted a higher prevalence of LBP among adolescent weightlifters, raising concerns regarding lifting technique and spinal stress (5). These differences may be attributed to variations in training experience, load management, and adherence to biomechanical principles, all of which likely influence outcomes related to pain and function.

The theoretical framework underpinning these findings may be explained by the fear-avoidance model of pain, which posits that individuals who interpret pain as threatening tend to avoid physical activity, thereby increasing disability and perpetuating chronic symptoms. Conversely, individuals who confront pain through graded exposure or sustained physical activity often experience reduced fear and improved function (6). In the context of our study, the weightlifting group likely benefited from repeated exposure to physical challenges, which may have contributed to desensitization of pain pathways and normalization of movement patterns. This habituation process may have minimized catastrophizing thoughts, enhanced confidence, and improved postural and neuromuscular control, leading to the observed reductions in kinesiophobia and disability.

From a clinical standpoint, these findings underscore the potential of incorporating supervised resistance training into rehabilitation programs for individuals with chronic LBP. Structured weightlifting, when properly instructed and individualized, may not only improve physical function but also address the psychological components of pain, offering a more holistic management strategy. Additionally, the emphasis on reducing fear-avoidance beliefs is particularly relevant in chronic cases where pain intensity does not necessarily predict disability severity. Encouraging patient engagement in strength-based exercises may therefore serve as a practical intervention to break the cycle of inactivity and chronicity.

While the study offers valuable insights, certain limitations should be acknowledged. The use of convenience sampling and a cross-sectional design restricts the ability to establish causality. Moreover, the study was conducted in urban settings and included a predominantly young adult population, limiting its generalizability to rural populations or older age groups. The gender imbalance between groups, with males dominating the weightlifting cohort and females the sedentary cohort, introduces a potential confounder, particularly considering known gender differences in pain perception, coping styles, and psychological distress. Additionally, although validated tools were employed, the adaptation of the FABQ-Brazil in the local context lacked formal linguistic validation, which may influence the interpretation of psychological scores.

Future research should focus on longitudinal and interventional studies to establish the directionality and sustainability of these associations. Randomized controlled trials examining the effect of structured weightlifting programs on pain, disability, and fear-avoidance in diverse populations are warranted. Furthermore, exploring gender-specific responses to strength training and

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examining underlying neurophysiological mechanisms through imaging or biomarkers could deepen the understanding of exercise-induced pain modulation. In the Pakistani context, culturally tailored exercise programs with embedded psychological support may enhance compliance and outcomes, particularly in settings where fear and misinformation about physical activity remain prevalent.

In conclusion, this study contributes to the evolving discourse on the biopsychosocial management of chronic LBP by highlighting the potential role of structured weightlifting in reducing disability and psychological barriers such as kinesiophobia. While limitations exist, the findings offer clinically relevant evidence to support the integration of resistance training into rehabilitative care for LBP, reinforcing the need for multidisciplinary and activity-based approaches in chronic pain management.

CONCLUSION

This study concludes that individuals with chronic non-specific low back pain who engage in regular weightlifting practices exhibit significantly lower levels of kinesiophobia and functional disability compared to their sedentary counterparts, despite similar prevalence of pain. These findings suggest that structured resistance training may offer protective effects against both the physical limitations and psychological barriers associated with low back pain. Clinically, the results support the integration of supervised weightlifting into rehabilitation strategies to enhance functional outcomes and reduce fear-avoidant behaviors. From a research perspective, the study highlights the need for longitudinal and interventional investigations to further explore the causal mechanisms and long-term benefits of exercise-based interventions in managing low back pain within diverse populations.

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