



Review Article

LOW BACK PAIN, ERGONOMICS AND AYURVEDA - A CLINICAL INSIGHT

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ABSTRACT

Low back pain (LBP) is a major cause of global disability, with most cases being non-specific and influenced by physical, psychosocial, and lifestyle factors. Conventional approaches involving physiotherapy and NSAIDs often yield limited outcomes, emphasising the need for individualised, holistic care. This review integrates modern ergonomic principles with Ayurvedic concepts to establish a comprehensive framework for LBP prevention and management. **Methodology:** Data were compiled from classical Ayurvedic texts and biomedical literature in databases such as PubMed and Google Scholar. The review synthesised evidence on the prevalence, aetiology, and management of LBP, with particular focus on ergonomics and Ayurvedic interventions. Keywords included "Low Back Pain and Ayurveda," "Ergonomics and Ayurveda," and "Musculoskeletal Disorders and Preventive Strategies." Occupational health scenarios were also analysed to merge theoretical and clinical insights. **Review Results:** LBP, often corresponding to Ayurvedic *Vata Vyadhi* conditions like *Gridhrasi*, *Katigraha*, and *Katishoola*, arises mainly from biomechanical strain and poor ergonomics. Prolonged static postures and repetitive movements exacerbate *Vata* imbalance. Modern ergonomic strategies, such as adjustable workstations and posture retraining, directly mitigate these factors. Complementary Ayurvedic therapies, such as *Basti* (medicated enema), *Snehana* (oleation), *Swedana* (sudation), and herbal formulations like *Trayodashanga Guggulu*, restore *Doshic* equilibrium and strengthen tissues. An integrative model that unites ergonomic optimisation with Ayurvedic therapies shows promise for sustainable relief and recurrence prevention. **Conclusion:** Integrating ergonomic principles with Ayurvedic management offers a patient-centred strategy that addresses both biomechanical and physiological dimensions of LBP. Future multi-centric randomised trials are needed to validate and standardise this integrative approach.

INTRODUCTION

Low back pain (LBP) involves pain, discomfort, stiffness, or muscle tension localised between the lower margin of the rib cage and the gluteal folds, with or without radiation to the lower limbs or association with sciatica.^[1] Chronic low back pain (CLBP) is defined as pain persisting beyond 12 weeks, commonly

involving the lumbar, lumbosacral, and sacroiliac regions, and may present with altered trunk muscle activation, spasm, atrophy, and recurrent episodes linked to chronic muscle hypoxia and adhesions.^[1] In most cases, LBP is non-specific, meaning no clear pathoanatomical cause can be identified, despite it being a complex and multifactorial condition influenced by physical, psychosocial, and lifestyle factors. ^[2,3] Classification is both pathological, distinguishing specific from non-specific causes, and temporal, dividing acute (<6 weeks), subacute (6–12 weeks), and chronic (>12 weeks) presentations. ^[4]

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LBP is the leading cause of years lived with disability worldwide, imposing significant personal, occupational, and economic burdens. Lifetime prevalence can reach 80%, with annual prevalence rates up to 65%, peaking between 30-60 years of age, and more common in females. Approximately 5-10% of acute LBP cases progress to chronicity, and recurrence rates within a year are high. Around 7.3% of the global population, including 10% of U.S. adults, live with chronic LBP-related disability. [5]

Current management emphasises non-pharmacological first-line strategies, such as physiotherapy, exercise programs, and psychosocial interventions. Pharmacological therapy, typically NSAIDs, is reserved for cases where physical rehabilitation alone is insufficient, though long-term use poses risks of dependency and adverse effects. Surgical interventions are limited to specific structural pathologies. Despite numerous therapeutic options, most treatments yield only modest benefits, highlighting the need for multimodal, individualized care strategies. [6]

Modern ergonomics extends far beyond workstation design, now incorporating a biopsychosocial framework that addresses physical posture, movement patterns, task demands, and psychosocial influences in both occupational and daily life settings. From a biomechanical perspective, poor spinal alignment, repetitive strain, and prolonged static postures contribute to spinal disc degeneration and pain syndromes. Ergonomic interventions are increasingly personalized, aiming to replace maladaptive movement behaviours with sustainable, functional alternatives through consistent practice. [2] Strategies include optimizing human-work interfaces, integrating adjustable workstations, implementing sit-stand cycles, and adopting safe manual handling techniques. Importantly, lifestyle-based ergonomics now complements occupational measures, recognizing that harmful postural habits extend beyond the workplace. [7]

Ayurveda offers a holistic extension to modern ergonomic principles, emphasizing the integration of biomechanical, physiological, and psychosomatic health. Classical Ayurvedic concepts such as *Shareera kriya* (body mechanics), *Dinacharya* (daily regimen), *Vyayama vidhi* (exercise discipline), and *Sadvritta* (ethical-lifestyle conduct) align closely with preventive ergonomic strategies. These principles promote spinal stability, muscular endurance, and optimal posture while addressing *Vata*-dominant musculoskeletal disorders such as *Katigraha* (lumbar stiffness). Preventive and rehabilitative measures, including targeted *Asanas*, *Abhyanga* (therapeutic massage), and postural modifications, address both the mechanical

and systemic contributors to LBP. Unlike purely mechanical ergonomics, Ayurveda incorporates constitution-based personalization (*Prakriti*), occupational demands, and seasonal adaptations, offering a truly individualized framework for prevention and rehabilitation.

MATERIALS AND METHODS

Data for this write-up was compiled from classical Ayurvedic texts, including *Brihatrayi* and *Laghutrayi*, to understand traditional perspectives on low back pain and related conditions. The contemporary review was conducted using standard biomedical textbooks and peer-reviewed scientific research articles accessed through Google Scholar, PubMed, Scopus, Elsevier, and other relevant databases. Search strategies included combinations of keywords such as “Low Back Pain AND Ayurveda,” “Low Back Pain AND Ergonomics,” “Ergonomics AND Ayurveda,” and “Musculoskeletal Disorders AND Preventive Strategies.” The review included both specific and non-specific low back pain literature, with emphasis on ergonomic risk factors and holistic management approaches. In addition, diverse clinical scenarios related to low back pain, observed in outpatient and occupational health settings, were critically analysed to integrate theoretical and practical insights.

REVIEW RESULTS

Low Back Pain Scenarios: Low back pain (LBP) is a multifactorial condition with presentations ranging from acute to chronic, arising from diverse aetiologies such as lumbosacral muscle strain, lumbar spondylosis, intervertebral disc herniation, spondylolysis, spondylolisthesis, vertebral compression fractures, spinal stenosis, metastatic tumours, and infections. [1] Non-specific LBP, which comprises the majority of cases, is often linked to biomechanical strain without identifiable structural pathology. In Ayurveda, such presentations align with *Vata Vyadhi*, particularly *Katigraha*, *Katishoola*, and *Gridhrasi*, characterized by *Shoola/Ruja* (pain), *Graha* or *Stambha* (stiffness), and *Suptata* (numbness). Clinical assessment tools such as the Oswestry Low Back Pain Disability Questionnaire (OLBDQ) and Roland-Morris Disability Questionnaire (RMDQ) are frequently employed to quantify functional impairment. [8,9]

Ergonomics and Its Utility: Ergonomics plays a pivotal role in preventing and managing LBP by aligning workspace design, posture, and load-handling techniques with human biomechanical capacity, thereby minimizing stress on lumbo-sacral spine. Inadequate ergonomics, such as static loading, awkward postures, and repetitive spinal stress, has

been strongly associated with chronic musculoskeletal pain. Workplace interventions including adjustable workstations, sit-stand desks, posture retraining, and

load-distribution techniques have been shown to significantly reduce LBP incidence and recurrence. [10,11,12]

Self-Management of Low Back Pain

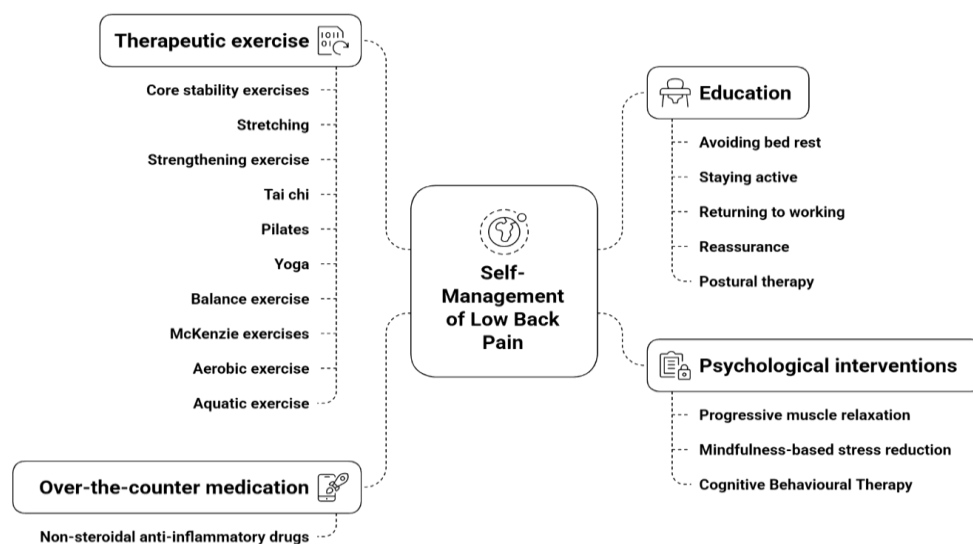


Figure 1: The mind map illustrates the components of self-management for low back pain

Ayurveda and Its Understanding in Ergonomics:

Ayurveda recognizes improper posture (*Asamyak vishrama*), overexertion (*Ativyayama*), and repetitive strain as *Nidana* (causative factors) for *Vata* aggravation in the *Kati pradesha* (lumbar region). Classical texts emphasize individualized assessment of *Prakriti*, *Dosha*, *Dushya*, and *Sthana* in formulating *Chikitsa*. Preventive strategies are embedded in *Dinacharya* (daily routine) and *Sadvritta* (ethical conduct), advocating balanced activity, correct body mechanics, and restorative practices. Therapeutic interventions such as *Abhyanga* (oil massage), *Swedana* (fomentation), and *Panchakarma* procedures not only address pathology but also reinforce ergonomic benefits by enhancing muscle-joint balance and proprioception.

Clinical and occupational health studies report high LBP prevalence among sedentary workers (76% in sitting-dominant and 70% in standing-dominant occupations). Prolonged static postures, repetitive bending, and manual handling without ergonomic precautions lead to recurrent LBP characterised by stiffness, reduced mobility, and episodic flare-ups. Integrative management, combining ergonomic corrections with Ayurvedic therapies such as *Basti* (medicated enema), *Raktamokshana* via *Alabu* (wet cupping), *Mahanarayana taila* application, and targeted yoga-based *Vyayama*, has demonstrated pain reduction, improved mobility, and decreased recurrence rates in multiple studies.

Faulty ergonomics, including prolonged sitting without lumbar support, incorrect lifting, and

sustained forward flexion, induces abnormal spinal loading, accelerates degenerative disc changes, and aggravates *Vata dosha*. Correction involves workstation redesign, posture education, load management, and therapeutic exercise programs such as the McKenzie method, yoga, aquatic therapy, and tai. From an Ayurvedic standpoint, these correspond to *Nidana parivarjana*, eliminating causative factors, to prevent recurrence and restore musculoskeletal integrity.

Clinical Insights: While modern biomedicine attributes LBP primarily to musculoskeletal strain, intervertebral disc pathology, or degenerative spine conditions, Ayurveda conceptualizes this condition largely under *Gridhrasi*, *Katishoola*, *Kati Graha*, *Prushthagraha*, and *Trikashoola*, rooted in *Vata* vitiation. Ergonomic factors, such as poor posture, improper lifting, prolonged sitting, and occupational strain, act as precipitating *Nidana* (causative factors) by inducing *Margavarana* or *Dhātukṣhaya*, thereby aggravating *Vata dosha*.

From a classical perspective, *Charaka Samhita* describes *Trikavedana* in *Pakwashayagata Vata* (Ch. Sa. Chikitsa Sthana 28), associates *Prushtha* disorders with excessive *Katu rasa* consumption, and lists *Prushthagraha* and *Trikagraha* among *Nānātmaja Vata Vyadhi*. Management includes *Shoolanashaka Yavagu* (Sutra Sthana 2–3). *Sushruta Samhita* notes these symptoms in *Vataja Arshas*, *Vankshanatha Vidhradhi*, *Bhagna* conditions, and *Sarpavisha Akshepa*, recommending *Basti Chikitsa* especially in *Katibhagna*. *Harita Samhita* categorizes *Vata* disorders into five

types with sixteen diseases each, placing *Katishoola* in *Gridhrasi* and *Amavata*, and detailing ten varieties of *Shoola* involving *Kati*, *Uru*, and *Janu*.

Bhela Samhita classifies low back pain under *Ekanga Vata*, citing *Mandagni* and obstructed *Vata gati* as causes, and prescribing *Yapana Basti*. *Kashyapa Samhita* emphasizes the role of *Asthi* and *Majja* as *Vata sthana*, linking obstetric trauma (*Dushprajata*) to *Katishoola*, advising *Swedana* and *Lashuna*. Both *Astanga Sangraha* and *Astanga Hridaya* align with earlier texts while adding that *Vyana* and *Apana Vata* dysregulation contribute to lumbar pain, which can precede *Vatarakta*.

Madhava Nidana records *Prishta Shoola* and *Trika Shoola* in multiple *Vataja* conditions including *Sangraha Grahani*, *Vataja Arsha*, *Amavata*, and *Aanaha*. *Gadanigraha* defines *Kati Graha* as *Vata* in the lumbar region, prescribing *Trayodashanga Guggulu*. *Bhava Prakasha* anatomically locates *Trika* as the sacroiliac junction, advocating *Valukasweda* and *Agnisweda*. *Sharangadhara Samhita* lists *Kati Graha* among *Nānātmaja Vata Vyadhi* with detailed therapeutic measures.

Pathogenetically (*samprapti*), LBP in Ayurveda involves *Vata*, predominantly *Vyana* and *Apana*, with *Asthi*, *Majja*, and *Snayu* as *Dushya*, and *Asthivaha/Majjavaha srotas* as the affected *Srotas*. The lumbar spine (*Kati pradesha*) becomes the seat of pathology when factors like excessive *Katu rasa*, overexertion, digestive weakness, childbirth trauma, or injury cause *Vata prakopa*. This results in localized pain and stiffness, leading to LBP.

Management integrates *Shamana* (e.g., *Trayodashanga Guggulu*, *Vatahara Kashayas*), *Shodhana* (e.g., *Niruha* and *Anuvasana Basti*), *Swedana* (e.g., *Valukasweda*, *Agnisweda*), and dietary/lifestyle corrections emphasizing *Snigdha*, *Ushna*, *Madhura rasa* foods, and avoidance of overexertion and cold exposure. Ergonomics in Ayurveda's light is thus not merely posture correction but a lifestyle discipline ensuring *Vata* equilibrium through balanced work habits, supportive seating, and rhythmic movement.

Ayurvedic management of low back pain (LBP), particularly *Vata Vyadhi* presentations such as *Katigraha*, *Katishoola*, and *Gridhrasi*, is guided by the principle of *Vyadhipratyanika chikitsa*, aiming both at symptomatic relief and interruption of the pathological process. Core interventions include *Sneha* (oleation) to lubricate and nourish tissues, *Sveda* (sudation) to alleviate stiffness, *Basti* (medicated enema) for pacifying aggravated *Vata* at its primary site, *Raktamokshana* (bloodletting) to remove vitiated blood and reduce localized inflammation, and *Agnikarma* (thermal cauterization) for chronic,

resistant pain. Wet cupping (*Alabu*) is indicated in *Suptata* (numbness), *Kandu* (itching), *Stambha* (rigidity), and *Grathita shoola* (deep-seated pain), acting via improved microcirculation, detoxification, and modulation of nociceptive pathways.

Herbal formulations such as *Trayodashanga Guggulu*, *Yograja Guggulu*, *Mahanarayana taila*, and decoctions like *Erandaamula kashaya* are commonly prescribed for their anti-inflammatory, analgesic, and strengthening effects. Adjunct therapies like *Katibasti*, *Patra pinda swedana*, and gentle yoga postures aid in restoring spinal mobility. Diet and lifestyle regulation (*Ahara-vihara*), including avoidance of overexertion, improper posture, and excessive exposure to cold, form preventive and rehabilitative measures. When integrated with ergonomic correction and posture training, these therapies provide a comprehensive, patient-centered strategy for effective management and recurrence prevention in non-specific LBP.

Limitations of the Review

This review is limited by the heterogeneity of available studies on low back pain (LBP), ergonomics, and Ayurvedic interventions, which often vary in diagnostic criteria, outcome measures, and follow-up duration. A paucity of high-quality randomized controlled trials (RCTs) combining ergonomic interventions with Ayurvedic modalities constrains evidence synthesis. In addition, ergonomic studies are often occupation-specific, making it challenging to extrapolate results across diverse work settings. Publication bias, language barriers in accessing regional Ayurvedic literature, and the lack of standardized treatment protocols further restrict comprehensive evaluation.

CONCLUSION

Low back pain remains a prevalent musculoskeletal disorder with significant occupational and lifestyle determinants, where poor ergonomics plays a pivotal role in both onset and chronicity. Integrating ergonomic corrections with evidence-informed Ayurvedic therapies, such as *Basti*, *Sneha*, *Swedana*, *Raktamokshana*, and targeted herbal formulations, offers a holistic, patient-centered approach. Ergonomics addresses biomechanical causative factors, while Ayurveda focuses on restoring *Dosha* balance, enhancing tissue strength, and preventing recurrence. The complementary nature of these approaches holds promise for sustainable relief and functional restoration. Future well-designed, multi-centric RCTs integrating ergonomic and Ayurvedic frameworks are essential to strengthen clinical evidence and guide standardized protocols.

REFERENCES

1. Liu K, Zhang Q, Chen L, Zhang H, Xu X, Yuan Z, Dong J. Efficacy and safety of extracorporeal shockwave therapy in chronic low back pain: a systematic review and meta-analysis of 632 patients. J Orthop Surg Res. 2023 Jun 24; 18(1): 455.
2. O'Keeffe M, O'Sullivan P, Purtill H, Bargary N, O'Sullivan K. Cognitive functional therapy compared with a group-based exercise and education intervention for chronic low back pain: a multicentre randomised controlled trial (RCT). Br J Sports Med. 2020 Jul; 54(13): 782-789.
3. Baroncini A, Maffulli N, Eschweiler J, Molsberger F, Klimuch A, Migliorini F. Acupuncture in chronic aspecific low back pain: a Bayesian network meta-analysis. J Orthop Surg Res. 2022 Jun 20;17(1): 319.
4. Zhang Z, Pasapula M, Wang Z, Edwards K, Norrish A. The effectiveness of cupping therapy on low back pain: A systematic review and meta-analysis of randomized control trials. Complement Ther Med. 2024 Mar; 80: 103013.
5. Marshall A, Joyce CT, Tseng B, Gerlovin H, Yeh GY, Sherman KJ, Saper RB, Roseen EJ. Changes in Pain Self-Efficacy, Coping Skills, and Fear-Avoidance Beliefs in a Randomized Controlled Trial of Yoga, Physical Therapy, and Education for Chronic Low Back Pain. Pain Med. 2022 Apr 8; 23(4): 834-843.
6. Thiveos L, Kent P, Pocovi NC, O'Sullivan P, Hancock MJ. Cognitive Functional Therapy for Chronic Low Back Pain: A Systematic Review and Meta-Analysis. Phys Ther. 2024 Dec 6;104(12): pzae128.
7. Rampazo ÉP, Júnior MAL, Corrêa JB, de Oliveira NTB, Santos ID, Liebano RE, Costa LOP. Effectiveness of interferential current in patients with chronic non-specific low back pain: a systematic review with meta-analysis. Braz J Phys Ther. 2023 Sep-Oct; 27(5): 100549.
8. Pema Zangmo, Ergonomics Adjustments For Chronic Mechanical Low Back Pain Patient': A Case Study. IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) Volume 23, Issue 12 Ser. 2 (December. 2024), Pg 44-48.
9. Chaiklieng S, Suggaravetsiri P. Low Back Pain (LBP) Incidence, Ergonomics Risk and Workers' Characteristics in Relations to LBP in Electronics Assembly Manufacturing. Indian J Occup Environ Med. 2020 Sep-Dec; 24(3): 183-187.
10. Markova, V.; Markov, M.; Petrova, Z.; Filkova, S. Assessing the Impact of Prolonged Sitting and Poor Posture on Lower Back Pain: A Photogrammetric and Machine Learning Approach. Computers 2024, 13, 231.
11. Billy GG, Lemieux SK, Chow MX. Changes in lumbar disk morphology associated with prolonged sitting assessed by magnetic resonance imaging. PM R. 2014 Sep; 6(9): 790-5.
12. Roman-Liu D, Kamińska J, Tokarski T. Effectiveness of workplace intervention strategies in lower back pain prevention: a review. Ind Health. 2020 Dec 4; 58(6): 503-519.

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