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Evidence-based occupational health: the role of physiotherapy in preventing low back pain and promoting functional longevity in professionals exposed to overload.

Evidence-based occupational health: the role of physical therapy in preventing low back pain and promoting functional longevity in workers exposed to physical overload

Evidence-based occupational health: the role of physiotherapy in preventing back pain and promoting functional longevity in professionals exposed to overload

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ABSTRACT

Low back pain is a frequent musculoskeletal condition associated with pain, disability, and functional limitations, and may be related to occupational exposure to high physical loads, sustained postures, repetitive movements, and unfavorable ergonomic conditions. In this context, physiotherapy can contribute to the management of symptoms and the preservation of the functional capacity of workers. This study aimed to analyze the contribution of physiotherapy to the prevention and management of low back pain, as well as to discuss its relationship with the maintenance of functionality in professionals exposed to occupational overload. This is a narrative, descriptive review with a qualitative approach, composed of national and international publications published between 2017 and 2021. Articles, books, academic papers, and institutional documents related to low back pain, physiotherapy, occupational health, ergonomics, and functional capacity were analyzed. Publications have pointed to the influence of biomechanical, ergonomic, and psychosocial factors on low back pain and have highlighted functional assessment, therapeutic exercise, lumbopelvic stabilization, muscle strengthening, health education, and ergonomic guidance as components of physiotherapy care. It is concluded that physiotherapy can contribute to the management of low back pain and the reduction of functional limitations.

However, the heterogeneity and small number of publications, as well as the scarcity of preventive studies conducted directly in the workplace, limit the generalizability of the results.
Keywords: Physiotherapy; Low back pain; Occupational health; Ergonomics; Functional capacity.

ABSTRACT

Low back pain is a common musculoskeletal condition associated with pain, disability, and functional

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limitations. It may be related to occupational exposure to high physical loads, sustained postures, repetitive movements, and unfavorable ergonomic conditions. In this context, physical therapy may contribute to symptom management and preservation of workers' functional capacity. This study aimed to analyze the contribution of physical therapy to the prevention and management of low back pain and to discuss its relationship with the maintenance of function in workers exposed to occupational overload. This narrative, descriptive, qualitative review included national and international publications issued between 2017 and 2021. Articles, books, academic works, and an institutional document addressing low back pain, physical therapy, occupational health, ergonomics, and functional capacity were analyzed. The publications indicated that biomechanical, ergonomic, and psychosocial factors influence low back pain and highlighted functional assessment, therapeutic exercise, lumbopelvic stabilization, muscle strengthening, health education, and ergonomic guidance as components of physical therapy care. Physical therapy may help manage low back pain and reduce functional limitations. However, the heterogeneity and small number of publications, together with the scarcity of preventive studies conducted directly in the workplace, limit the generalizability of the findings.

Keywords: Physical therapy; Low back pain; occupational health; Ergonomics; Functional capacity.

INTRODUCTION

Occupational health is fundamental to promoting quality of life and preserving...
functional capacity and the healthy retention of workers in their professional activities.
In various work contexts, continuous exposure to high physical loads and sustained postures...
or inadequate, repetitive movements, excessive effort and unfavorable ergonomic conditions
It can promote the development or worsening of musculoskeletal disorders, among others.

Lower back pain is a prominent symptom.

The lumbar spine participates in supporting the body, transferring loads, and performing bodily functions.
trunk movements. Its stability depends on the integration between passive structures, such as
vertebrae, discs and ligaments, and active and neuromuscular control components, especially the
Muscles of the trunk, pelvis, and lower limbs. Changes in strength, endurance, and...
Motor control can modify the distribution of loads and contribute to the persistence of symptoms.
in individuals with nonspecific chronic low back pain (LONGEN; BRANDLFI, 2018).
Low back pain has a multifactorial origin. In addition to physical demands, individual factors,
Behavioral, organizational, and psychosocial factors can influence the onset, intensity, and
Persistence of symptoms. At work, manual handling of loads, bending and rotation.
frequent trunk movements, prolonged time in a seated or standing position, repetitiveness, absence
Short breaks and inadequate workstations are relevant exposures, but should not be...
interpreted as isolated causes (GOMES, 2019).
The persistence of pain for a period exceeding 12 weeks characterizes chronic low back pain.
In this condition, the disability does not depend exclusively on structural changes; related beliefs

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Pain, fear of movement, stress, social conditions, and job demands can also contribute.
to interfere with functionality. Therefore, the physiotherapy assessment must consider the person, their
activities, their participation and the work context, in line with an approach
biopsychosocial.

In the field of physiotherapy, therapeutic exercise is one of the most commonly used approaches for...
Lower back pain. Strengthening, mobility, endurance, and stabilization programs can help.
Motor control and the execution of functional activities. The Pilates method is one of the possibilities.
but it should not be presented as superior to other forms of exercise, because the results
They depend on clinical characteristics, progression, adherence, and individual goals (KURIKI;
KEYS; ALVES, 2017; SILVA et al., 2018).

Performance in the occupational environment also includes analysis of task demands, guidance
ergonomics, health education, encouragement of physical activity, break planning and
Functional monitoring. These actions need to be coordinated with organizational measures, because
Interventions targeting only individual behavior may be insufficient when...
Working conditions remain inadequate.

In this study, functional longevity is understood as the preservation, throughout life...
professional, the ability to perform work tasks and daily activities autonomously,
safety and participation. The term is used from a perspective of care, and not as a
outcome directly measured by the publications analyzed.

Given this context, the objective of this study was to analyze, based on publications available up to [date].
In 2021, the contribution of physiotherapy to the prevention and management of low back pain was discussed, as well as...
its relationship with maintaining the functional capacity of professionals exposed to overload.
occupational.

METHOD

This is a narrative literature review, descriptive in nature and with a qualitative approach.
This approach was adopted to integrate different types of publications and discuss the role of physiotherapy.
Given the challenges of low back pain and occupational demands, and since this is not a systematic review, the
The results should be interpreted as a critical and contextual synthesis, without any claim to be exhaustive.
literature or to quantitatively estimate the effectiveness of interventions.

The documentary corpus consisted of nine national and international publications, disseminated
between 2017 and June 2021, and previously selected for their relationship with the following themes:
Lower back pain or lumbago; physiotherapy; occupational health; ergonomics; physical overload; quality of life.

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Life; functional capacity; assessment; prevention or treatment. Scientific articles were included. technical books, academic papers, and institutional documents, considering the diversity of Sources available for the proposed discussion.

Documents involving human subjects or focused on organizations were considered eligible. of physiotherapy care and practice; publications addressing low back pain, functionality, worker health or physiotherapy interventions; full texts available for consultation; and Materials published in Portuguese or English were excluded. Publications focused on [specific topic] were also excluded. surgical procedures, specific structural deformities, or clinical conditions that prevented An analysis of nonspecific low back pain and its relationship to functionality.

The publications were examined for authorship, year, purpose, design, and... Contributions to the topic. The information was organized into two tables and submitted for analysis. descriptive and interpretative. Convergences and divergences related to the factors were identified. associated with low back pain, assessment methods, physiotherapy strategies, and repercussions functional and occupational.

As a matter of rigor, the conclusions were limited to the design and scope of each study. publication. Therapeutic studies conducted with people who already had low back pain were not interpreted as direct proof of prevention, and results obtained from small samples were not generalized to all professional categories.

RESULTS AND DISCUSSION

Table 1 – Characterization of the publications included

N	Author/Year	Type	Main theme
1	Longen and Brandolfi (2018)	Review article	Physical inactivity, functionality, and nonspecific chronic low back pain.
2	Miranda (2020)	Book	Physiotherapy in primary care: assessment and organization of care.
3	Days (2021)	Book	Integrative practices and strategies in physiotherapy and health.
4	Gomes (2019)	Dissertation	Ergonomics, manual handling of loads, thermal environment, and musculoskeletal injuries.

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N	Author/Year	Type	Main theme
5	IBGE (2020)	Institutional document	Health conditions, lifestyles, and chronic diseases of the Brazilian population.
6	Justi (2020)	Academic work/technological product	Development of a tool for assessing low back pain.
7	Kuriki, Chaves and Alves (2017)	Technical chapter	Segmental stabilization and the Pilates method for pain. lumbar.
8	Ribeiro (2020)	Final course project	Health and quality of life of workers who use computers.
9	Silva et al. (2018)	Clinical trial randomized	Pilates versus Conventional kinesiotherapy for chronic low back pain.

Source: Prepared by the authors (2021).

The nine publications presented different levels of evidence and objects of analysis. The set
It included a clinical trial, a review, books, academic papers, a technical chapter, and a...
population document. This heterogeneity broadened the contextualization of the topic, but prevented
Direct comparisons were not possible and did not allow for the estimation of a single effect of physiotherapy in the prevention of low back pain.
occupational.

Publications have converged on the multifactorial nature of low back pain. Biomechanical aspects,
Physical exposure, activity level, behavior, work organization, and psychosocial factors.
They can interact in the occurrence and persistence of symptoms. Thus, linear cause-and-effect relationships...
The effects should be avoided. The presence of sustained postures or the movement of loads represents
relevant exposure, but its impact varies according to intensity, frequency, and
recovery, individual conditions and organizational context (GOMES, 2019; LONGEN;
BRANDLFI, 2018).

Among workers who use computers, prolonged time spent sitting, low
Postural variability and inadequate workstation organization can be associated with discomfort.
musculoskeletal. Ribeiro (2020) described the health and quality of life profile of
Workers undergoing physiotherapy follow-up. Because this is a cross-sectional study,
Their results characterize the population evaluated, but do not demonstrate that the intervention has...
caused changes in health or quality of life.

The physiotherapy assessment should include anamnesis, physical examination, functional analysis, and investigation of...

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Occupational context. Information about the onset, duration, and behavior of pain, symptoms.
neurological limitations, task demands, sleep, physical activity, psychosocial factors, and strategies.
Coping strategies help define priorities. Pain intensity scales and instruments of
Disability tests, such as the Oswestry Disability Questionnaire, can be used to monitor progress.
but they do not replace clinical reasoning. Neurodynamic tests, such as the leg raise test
extended, they should be used when clinically indicated and interpreted in conjunction with
the other findings (MIRANDA, 2020; JUSTI, 2020).

In the study by Silva et al. (2018), 16 participants with chronic low back pain completed 12 sessions of
treatment. The experimental group performed Pilates exercises, while the control group
Conventional kinesiotherapy was performed. There was intragroup improvement in the Pilates group, but it was not...
A statistically significant difference was observed between the groups. Therefore, the study supports the...
Pilates as a therapeutic option, not as a superior modality. The small sample size, the losses
The lack of time during follow-up and the low statistical power limit the generalizability of the results.
Lumbopelvic stabilization can be integrated into exercise programs when compatible with the...
The person's goals and needs. However, the intervention should not be limited to strengthening...
of isolated muscles or the correction of a supposedly ideal posture. It is recommended to consider
load progression, resistance, mobility, motor control, gradual exposure to activities and
functional return, respecting preferences, tolerance and professional demands (KURIKI;
CHAVES; ALVES, 2017).

In the field of prevention, physiotherapy can contribute to health education and the promotion of...
physical activity, ergonomic analysis, break planning, task adaptation and the
Monitoring of signs and limitations. However, the publications included provide direct evidence.
Limited information on the primary prevention of work-related low back pain. Much of the material addresses...
treatment, assessment, or quality of life of people already exposed or symptomatic. Therefore, the
Results should be described as indicative of potential contribution, not as proof.
definitive reduction in the incidence of lower back pain or absences from work.

In this review, the term functional longevity represents the continued capacity to
To perform work and daily activities over time. None of the publications
followed the workers for a sufficient period to directly measure this outcome.
Still, reducing limitations, improving physical capacity, education, and adapting to...
Demands can form part of strategies aimed at functional preservation. This interpretation should
to remain cautious and linked to the need for long-term monitoring.

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LIMITATIONS

This review has limitations related to the small number and heterogeneity of...
publications included. The corpus brought together different designs and sources, such as books, papers
academics, institutional documents, reviews, and clinical studies, which made evaluation impossible.
Combined results. Furthermore, no systematic search was conducted using a pre-established protocol.
registered, nor formal assessment of the risk of bias.
Furthermore, some of the publications did not specifically investigate occupational low back pain.
Primary prevention or functional longevity. Intervention studies presented samples
limited and short follow-up periods. Consequently, conclusions should not be drawn.
generalized to all occupations nor interpreted as proof of causality or effectiveness.
Long-term preventative care.

FINAL CONSIDERATIONS

The analysis of the publications made it possible to identify that low back pain in workers should be
understood as a multifactorial condition, influenced by individual, biomechanical factors,
Ergonomic, organizational, and psychosocial factors. Exposure to physical loads, sustained postures, and
Repetitive movements may play a part in this process, but they alone do not explain its appearance.
or the persistence of pain.
Physical therapy can contribute to the management of low back pain through comprehensive assessment.
therapeutic exercise, muscle strengthening, mobility, lumbopelvic stabilization, education in
Health and guidance related to occupational demands. The Pilates method is an alternative.
Possible, without evidence of superiority over conventional kinesiotherapy in the small trial.
Clinical inclusion.
In occupational health, care should link individual interventions to changes in
working conditions. Physiotherapeutic intervention should not be limited to treating existing pain.
installed nor transfer the responsibility for prevention exclusively to the worker. Measures
organizational, task adaptation, postural variation, recovery and participation of
Workers are important components of an integrated approach.
It is concluded that physiotherapy has the potential to reduce pain and functional limitations and to
to support the maintenance of work capacity. However, the evidence gathered does not allow us to affirm,
definitively, these interventions prevent occupational low back pain or promote it.
Long-term functional longevity. Prospective studies, with larger samples, different

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Professional categories and prolonged follow-up are necessary to evaluate these outcomes.

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