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Does Physiotherapy Improve Physical Function, Kinesiophobia, and Quality of Life in Individuals with Back, Knee, and Ankle Problems?

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Abstract

Backgrounds Physiotherapy significantly manage patients with pain, functional abilities, and kinesiophobia. **Significant** This study investigates the effectiveness of physiotherapy on physical functions, kinesiophobia, and quality of Life (QoL) for lower back, knee, and ankle conditions. **Methods** The search strategy followed PRISMA guidelines (including PubMed and science direct). **Limitations** Very little evidence on kinesiophobia and QOL for knee and ankle problems. **Findings** The search retrieved 308 articles, but only four were selected for evaluation. **Implications** Physiotherapy efficiently manages physical function, kinesiophobia, and QoL; however, additional research is urgently needed for more effective outcomes.

Keywords: Physiotherapy, Physical functions, Kinesiophobia, Quality of Life

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1.0 Introduction

Most individuals will suffer from musculoskeletal pain, which increases financial burden and absenteeism (Luque-Suarez et al., 2019). Physical, biochemical, kinesiophobia, and quality of Life (QoL) variables are associated with a poor prognosis for musculoskeletal pain. These variables explain why many individuals with musculoskeletal injuries do not recover (Luque-Suarez et al., 2019).

Patients' functional capacities and kinesiophobia have improved significantly due to physiotherapy treatment. In recent decades, conceptual frameworks, such as kinesiophobia and pain management, have been applied to define the relationship between fear and pain (Lundberg et al., 2011). In the 1980s, Lethem et al. suggested the fear-avoidance theory to explain why specific injuries progress to chronic disease while others typically recover. Moreover, kinesiophobia refers to the relationship between fear and pain that influences the patient's knowledge of their individual experiences, which vary from person to person. Males with chronic pain reported a prevalence of kinesiophobia between 50% and 70% higher than females. (Castanho et al. 2021). Rarely does this phobia encompass all sorts of physical activity; instead, it focuses solely on specific motions.

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Kinesiophobia has also been linked to a lack of physical activity in patients with persistent pain, decreased clinical performance, inability to perform daily living activities, and job loss in individuals with low back pain (Castanho et al., 2021). Kinesiophobia reduced the patients QoL. The term "quality of life" refers to an individual's physical, psychological, and social well-being. Personal experiences, expectations, attitudes, and beliefs determine how patients view their current performance and degree of contentment relative to their ideal performance (Castanho et al., 2021).

Zadro and Ferreira (2020) were the first researchers to present an exhaustive summary of the available physiotherapy treatments for musculoskeletal conditions. This study reveals that 63% of physiotherapists adhere to the recommendations or systemic review. Based on a comprehensive analysis of 94 studies from 19 nations, it has a higher rate than the recommended care provided by other health providers in the United States. It shows a rise from 55% in 2003 (McGlynn et al., 2003) to 57% in 2012, indicating an improvement from that point (Runciman et al., 2012). They determined that physiotherapy provides superior evidence-based care to its medical competitors.

Previous research has examined physiotherapy as a treatment for low back pain (LBP). On the other hand, nothing is known about the impact of physiotherapy and kinesiophobia care on the QoL of patients with knee and ankle diseases. The objective of this review is to determine the extent to which physiotherapy can aid in the treatment of physical functions, kinesiophobia, and overall QoL in patients with disorders affecting the lower back,

2.0 Literature Review

Given the lack of studies on the effects of the Covid-19 epidemic on musculoskeletal difficulties, future research should focus on pathological abnormalities and increase the sample size. Giorgino et al. (2021) reported that the Covid-19 pandemic shutdown did not affect knee pathology; however, there is a paucity of research on the Covid-19 pandemic's influence on knee pathologies, and future research should focus on pathological changes as 75% are more likely to spend extensive periods sitting, which may or may not increase their risk of developing lower limbs musculoskeletal conditions associated with sedentary lifestyles and prolonged sitting (Blom et al., 2021).

Physiotherapists are the first point of contact for patients seeking therapy for musculoskeletal pain (MS) in Denmark and Sweden (Jrgensen et al., 2000). MS pain accounted for 5.9% of all complaints in a general practitioner's office in Malaysia in 2011, with back and knee pain being the most prevalent (Dasgupta et al., 2021)

According to Castanho et al. (2021), 54% of patients seeking physiotherapy exhibited severe kinesiophobia. If 50% of patients with chronic pain have kinesiophobia, rehabilitation based solely on biological principles is unlikely to be beneficial. Consequently, assessing the degree of kinesiophobia in therapy-seeking patients is essential. Those with a high degree of kinesiophobia reported significantly greater pain levels than those with a low degree (Vaegter et al., 2004). (2018). Due to the brain's long-term memory of pain connected with the sense of danger or threat, these defensive reflexes may persist even in the absence of physical discomfort, fear of pain, or reinjury in those with kinesiophobia (Castanho et al., 2021).

Patients with persistent low back pain (LBP) had a much greater prevalence of kinesiophobia than would be expected by chance. Although the underlying mechanisms are unknown, numerous studies have shown a link between kinesiophobia and persistent LBP. The frequency of kinesiophobia ranged from 57.1 to 92 % among patients with persistent LBP (John et al., 2022). Based on 5251 investigations, Castanho et al. (2021) determined that kinesiophobia is a prevalent symptom of several musculoskeletal illnesses. Due to its usefulness in clinical physiotherapy practice. The management of kinesiophobia in physiotherapy has been extensively investigated and tackled in recent years. The outcome is influenced by the physiotherapist's expectations of the patient. Physiotherapists must consistently encourage and assist their patients (Castanho et al., 2021).

Numerous studies emphasize the importance of psychological responses to the initial injury, surgery, recovery, and rehabilitation as predictors of postoperative return to normal activities and sport, in addition to a pre-operative physical examination, and physiotherapists must identify patients with a high level of kinesiophobia (Xu et al., 2020). Psychological evaluations enable the identification of individuals at risk of developing potentially maladaptive psychological responses to injury and the creation and execution of therapies to address these issues (Gómez-piqueras et al., 2020).

Physiotherapists can change individuals' fear-based perceptions and prolong the healing process. When patients consider their condition temporary, they may acquire less dread of the pain associated with activity, resulting in a more aggressive response to pain and a quicker return to function. On the other hand, patients who report that rehabilitation is ineffective may demand additional therapy with the expectation of a prolonged recovery, which contributes to their delayed recovery (Tichonova et al., 2016). The prognosis and QoL are enhanced for patients who see pain as non-threatening and can engage in everyday activities despite discomfort (Tichonova et al., 2016).

According to research, 57 % of individuals continue to endure the same symptoms and have poor results between five and eight years after enrolling in a clinical trial (Lankhorst et al., 2015). In addition, the severity of symptoms may remain the same or worsen in 50% of those affected (Blond & Hansen, 1998), limiting a person's capacity to engage in physical activity and potentially diminishing their QoL.

3.0 Methodology

Literature search between November 2021 and June 2022 through the following databases: PubMed and ScienceDirect. The articles included in this collection were written in English, peer-reviewed, and lacked a publication date constraint. "lower back pain," "hip pain," "knee pain," "ankle pain," "kinesiophobia," "physiotherapy," and "quality of life" were the search theme. The most successful way of identifying publications was to peruse the "reference" sections of pertinent studies and utilize the PubMed database's "related articles" option (Walton et al., 2016).

The inclusion criteria were determined using population, intervention, comparison, and outcome (PICO) methodologies.

Population: Subjects with low back and lower limb musculoskeletal conditions

Intervention: Conditions of the Musculoskeletal System that require physiotherapy management.

Comparison: Comparative study of the effects of QoL and kinesiophobia on the treatment of physiotherapy

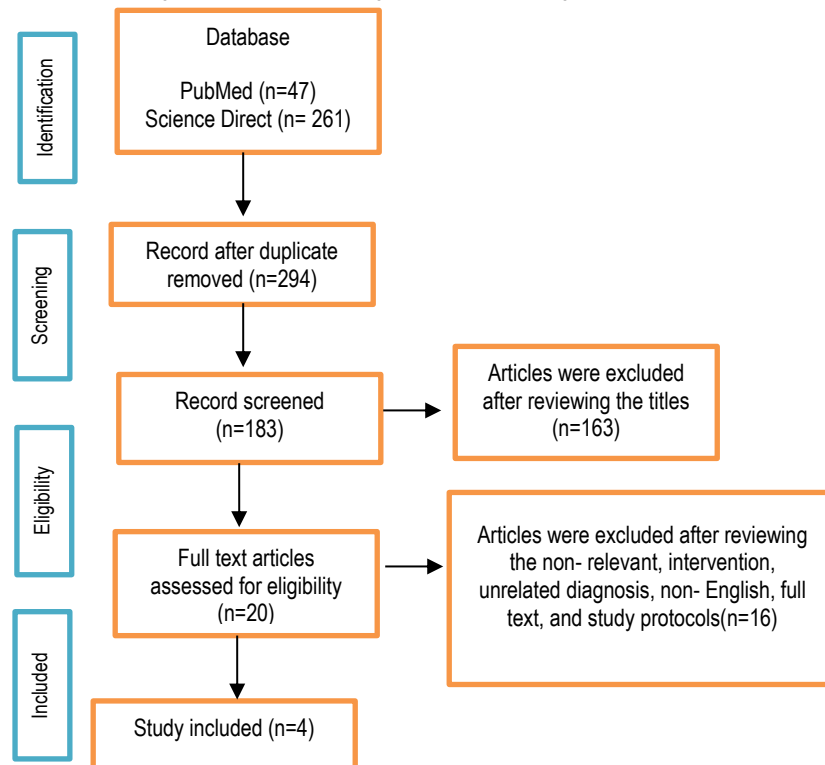
Outcomes: All outcomes about musculoskeletal disorders, QoL, and kinesiophobia.

Ten years of limitations to obtain current articles regarding the implementation of physiotherapy management on kinesiophobia and QoL of lower back and lower limb conditions.

Manual exclusion includes Literature reviews and theses to verify whether the studies satisfied the inclusion criteria. Studies were selected using the basis of title, study design, methodologies, intervention, and population.

Inclusion criteria include experimental studies on physiotherapy management prescribed for musculoskeletal pain, kinesiophobia, and QoL. The study types included in this study were experimental studies, randomized controlled trials (RCTs), and observational cohorts. All of the studies were ranked based on the hierarchy levels of evidence by the National Health and Medical Research Council (NHMRC). The Preferred Reporting Items Systemic Reviews and meta-analysis (PRISMA) statement was followed (figure 1).

Figure 1: PRISMA flow diagram of search strategies



3.1 Study selection

Studies included when the inclusion criteria were satisfied: Physiotherapy management, lower back pain, knee, ankle with kinesiophobia, and QoL. Characteristics of the studies selected as full-text language articles and those that used outcome measures such as pain, physical function, disability, and Tampa scale.

The exclusion criteria were: Unrelated title keywords to research themes; ambiguous papers; unfinished studies, study protocols, abstracts, and reviews.

3.2 Data Extraction

The study design, sample size, inclusion and exclusion criteria, the intervention, the results, and the study's conclusion were all retrieved. The studies were summarized following the design, intervention, outcome measures, and time points.

3.3 Collection, Analysis, and Interpretation of Evidence

All available full-text papers from web databases were downloaded and gathered for the data. Following that, the papers were critically reviewed. The publications were ranked according to the Guideline Hierarchy Level of Evidence established by the National Health and Medical Research Council.

4.0 Findings

4.1 Articles supporting lumbar conditions on physiotherapy management, kinesiophobia, physical functions, and quality of Life: two

Ulug et al. (2016) enrolled 300 people (mean age 43.211 years) with LBP and 300 persons with neck discomfort (mean age 42.810.2 years). The Short-Form McGill Pain Questionnaire for the severity of the pain, The Nottingham Health Profile for QoL, and the Tampa

Scale for kinesiophobia assessment. The results reveal that pain levels were comparable in both groups, with low back pain scoring 6.72 and neck discomfort scoring 6.82 on the Visual Analogue Scale. The LBP group had significantly higher pain [$z=4.132$] and physical activity [$z=5.640$] scores on the Nottingham Health Profile. The group suffering from low back pain had considerably more severe kinesiophobia, scoring an average of 42.055.91 on the Tampa Scale for Kinesiophobia [$z=4.732$] compared to 39.76.0. The authors discovered that individuals with low back pain had a more severe form of kinesiophobia, regardless of the intensity of the pain, as well as an increased perception of pain and decreased physical activity levels. Kinesiophobia harms an individual's QoL and demands effective LBP treatment.

Kothari et al. (2019) evaluated thirty samples of patients with LBP. Pre-treatment VAS was 4.133 1.59 but significantly lowered to 1.533 0.68 post-treatment, with a t value of 9.64. Pre-treatment VAS on activity was 7.667 0.71 but significantly lowered to 1.867 1.07 post-treatment, with a t value of 24.4. TSK was 49.6 4.11 pre-treatment but decreased to 34.13 3.13 post-treatment. ODI was 38.13 9.49 pre-treatment and reduced to 24.4 8.84 post-therapy. This study concluded that traditional physiotherapy effectively relieves pain, kinesiophobia, and functional impairment in patients with mechanical LBP. They demonstrated that minimal stretching, hot pack, back flexion, and extension exercises are beneficial in lowering pain, kinesiophobia, and impairment in LBP.

4.2 Articles supporting knee conditions on physiotherapy management, kinesiophobia, physical functions, and QoL: one

Hartigan et al. (2013) compared quadriceps strength, single-leg hop score, self-reported knee function (Knee Outcome Survey Activities of the daily living subscale, global rating scale), and kinesiophobia (Tampa Scale of Kinesiophobia [TSK-11]) between potential copers ($n = 50$) and noncopers ($n = 61$) in two clinical trial databases. Correlations were used to examine the relationship between kinesiophobia and other clinical variables that were similar in the Chmielewski et al. (2008) study; It shows that fear of movement/reinjury levels appear to decrease during ACL reconstruction rehabilitation and are associated with function when patients return to sports. This study reported that strengthening the quadriceps helps reduce kinesiophobia and increase physical function in returning to sports for ACL repair rehabilitation.

According to the findings of this study, kinesiophobia levels were raised before ACL reconstruction, particularly in individuals with inferior dynamic knee stability. Following the restoration of the anterior cruciate ligament (ACL), kinesiophobia levels decreased, which was substantially correlated with improved knee function throughout daily activities. Clinically, kinesiophobia levels remained elevated at six months and reached a plateau between 6 to 12 months post-surgery, when athletes are often cleared to return to sports—monitor kinesiophobia levels from the moment of ACL rupture to one year after surgery.

4.3 Articles supporting ankle conditions on physiotherapy management, kinesiophobia, physical functions and QoL: One.

Walankar et al. (2021), utilizing the Foot and Ankle Ability Measure (FAAM), the Tampa Scale, and the 36-Item Short-Form Health Survey questionnaire (SF-36), indicates that ankle abnormalities relate to poor physical functioning, decreased kinesiophobia, and poor QoL. Walankar et al., (2021) discovered a statistically significant negative correlation between the TSK score and the FAAM-S ($r = 0.5$, $p = 0.005$) and a weak negative correlation between the TSK score and the SF-36 physical component summary ($r = 0.42$, $p = 0.02$). On the other hand, TSK did not correlate significantly with FAAM-ADL or SF-36 mental component summary, which were linked with increased fear of mobility, impaired physical function, and poor health-related QoL in patients with functional ankle instability.

As a result, it is vital to analyze these aspects in these individuals.

According to the findings of this study, persons with functional ankle instability exhibited higher mobility anxiety, decreased physical function, and decreased QoL as it relates to their health. It is essential to evaluate patients' perceptions of their functions and psychological elements when improving the quality of patient care. When evaluating these patients, it is crucial to incorporate these components, as doing so will provide a holistic and multimodal approach to the understanding, planning, and rehabilitation of these individuals.

Table 1: Table of evidence

Conditions	Authors	Study Design	N	Outcome Measures	Interventions	Results	Conclusion
Lower back pain (Kinesiophobia and QoL)	(Uluğ et al., 2016)	Cross sectional	300	<ul style="list-style-type: none"> Form McGill Pain Questionnaire The Nottingham Health Profile (QoL) Tampa Scale 	Interventions and no intervention	<ul style="list-style-type: none"> Pain group had significantly higher pain ($z=4.132$) and physical activity ($z=5.640$) LBP had considerably more severe kinesiophobia, scoring an average of 42055.91 on the Tampa Scale for kinesiophobia ($z=4.732$) 	LBP had a more severe form of kinesiophobia, regardless of the intensity of pain, as well as an increased perception of pain and decreased physical activity levels. Kinesiophobia harms an individual QoL
Lower back pain (PT Management, kinesiophobia, pain and disability)	(Kothari et al., 2019)	Experimental study	30	<ul style="list-style-type: none"> VAS at rest, VAS with activities TSK Oswestry Disability Index (ODI) 	Conventional PT Management <ul style="list-style-type: none"> Minimal stretching Hot pack Back and extension exercises 	Pre VAS was 4.133 1.59 but significantly lowered to 1.533 0.68 post VAS with a t value of 9.64. Pre VAS on activity was 7.667 0.71 but significantly lowered to 1.867 1.07 post VAS with a t value of 24.2. TSK was 49.6.4.11 pre VAS but decreased to 34.13 3.13 post VAS. ODI	PT Management effectively relieves pain, kinesiophobia and functional impairment in patients with mechanical LBP

						was 38.139.49 pre-treatment and reduced to 24.4 8.84 post-therapy	
Knee pain	(Hartigan et al., 2013)	Secondary analysis of data from 2 longitudinal clinical studies	151	<ul style="list-style-type: none"> • Knee outcome Survey Activities of Daily Living Subscale • Global Rating Scale • Tampa Scale 	<ul style="list-style-type: none"> • ACL reconstruction rehabilitation • Preoperative neuromuscular training program • Post operative rehabilitation 	Knee Outcome Survey Activities on the daily living subscale, global rating scale and kinesiophobia. (Tampa Scale of Kinesiophobia (TSK=11) between potential copers (n=60) and non copers	Strengthening the quadriceps helps decrease kinesiophobia and increase physical function in returning to sports for ACL repair rehabilitations
Ankle pain (Kinesiophobia, physical functions and QoL	(Walankar et al., 2021)	Cross sectional	30	<ul style="list-style-type: none"> • Tampa Scale • FAAM 	Observation and intervention	The TSK correlations with FAAM-ADL, FAAM-S and SF36. The TSK showed a moderate negative correlation with FAAM-S ($r=-0.5$, $p=0.005$) and a week negative correlations with SF-36 physical component summary ($r=0-0.42$, $p=0.02$). However, TSK showed no significant correlation with FAAM-ADL and SF -36 mental component summary.	<ul style="list-style-type: none"> • Functional ankle instability exhibited higher anxiety of mobility, decreased physical function and a decrease in their QoL. • Evaluate patients' perceptions of their functions and their psychological elements when doing an evaluation of these patients

5.0 Discussion

This study showed that care of LBP, knee, and ankle conditions through physiotherapy management influences kinesiophobia and QoL. Physiotherapists consistently underestimate the significance of physical functions, kinesiophobia, and QoL in patients with LBP, knee, and ankle disorders. This research expands the scope and efficacy of physiotherapy management and the role of kinesiophobia and QoL engagement in treating low back pain and knee and ankle disorders. According to the search, no studies examined the impact of physiotherapy management on kinesiophobia and QoL in patients with knee conditions. It would be fantastic if research were conducted on this topic, given that these circumstances appear to be expanding year after year on a global scale (de Oliveira Silva et al., 2020).

Physiotherapy management effectively improved physical function, kinesiophobia, and QoL. With limited published articles, it would be great to explore the current issues further. This exploration will enhance the evidence of a practical physiotherapy approach for individuals with physical function, kinesiophobia, and QoL problems.

This literature review is limited to 10 years; therefore, there was a lack of available articles on physiotherapy management on kinesiophobia and QoL. Although our literature review summarizes the positive influence of kinesiophobia and QoL on LBP, knee, and ankle conditions, our findings should be interpreted cautiously because the two reviewed articles involved questionnaires and not on physiotherapy management alone.

In two of the reviewed studies, the ages of the participants who took part were not considered. Even though kinesiophobia is more common in older persons, it is linked to a reduction in one's ability to perform physically demanding tasks due to ongoing pain (Larsson et al., 2016).

6.0 Conclusion & Recommendations

Insufficient research and data on kinesiophobia and QoL for knee and ankle problems. While prior studies showed that kinesiophobia influences knee problems and overall QoL, the study was determined to have limitations. The study only focuses on surgery and ACL management.

Another limitation was the absence of data on patients' use and dosage of analgesic, anti-inflammatory, and antidepressant drugs, which may have altered the quality and intensity of their pain. Physiotherapists may aid PFPs in managing their kinesiophobia and improving their overall QoL. Additional research is necessary to clarify and enhance the facts on the effects of kinesiophobia and poor QoL on physiotherapy patient treatment. There is no conclusive evidence that addressing these knee and ankle issues with physiotherapy care is effective. According to Castanho et al. (2021), kinesiophobia and QoL are difficulties that have been progressively explored and addressed in physiotherapy clinical practice; therefore, physiotherapists should not dismiss their assessment utilizing these factors.

Previous research has demonstrated a connection between physiotherapy management for LBP, kinesiophobia, and QoL in patients with knee and ankle disorders. We agreed that there was a correlation based on this literature review study; however, the significance of this correlation needs to be investigated further through a systematic review before we can validate this matter.

6.1 New recommendations for future study

Based on our findings, there are several knowledge gaps in physiotherapy management research that might benefit from additional research, including a realist assessment to extend and further test the theory we have created here:

- 1) Because there is no research on the link between kinesiophobia and pain and disability, it would be good to have a study that studies the association between kinesiophobia, pain, and physical functioning.
- 2) It is common knowledge that kinesiophobia can be an obstacle in physiotherapy rehabilitation; nevertheless, the influence of kinesiophobia on the course of lower limb physiotherapy rehabilitation was not completely recognized.
- 3) It would be beneficial to do in-depth research on how kinesiophobia and QoL affect the management of physiotherapy patients. To better understand the relationship between kinesiophobia and QoL, additional research should examine different therapeutic approaches, such as physiotherapy and physical function training.
- 4) It would be fascinating to capture the experiences and perspectives of patients with LBP, knee, and ankle issues which have received physiotherapy management for kinesiophobia and how it improved their QoL through qualitative research.
- 5) There is room for improvement in the information on patients' usage of analgesic, anti-inflammatory, and depression drugs and the dosages of those medications, which have the potential to have affected the nature and degree of the patient's pain.
- 6) Physiotherapy management is a strategy in the current worldwide management of knee and ankle conditions; as a result, future clinical practice and study recommendations should combine physical function assessment and treatment with kinesiophobia assessment and QoL assessment.
- 7) Experimental research utilizing biopsychosocial techniques that methodically address and diminish kinesiophobia and studying the influence of kinesiophobia on rehabilitation were identified by a systemic review as having the potential to reduce kinesiophobia (Luque-Suarez et al., 2019)

In conclusion, our review showed that a phobia of movement, known as kinesiophobia, is linked to increased levels of pain and impaired physical performance in patients with LBP and knee and ankle disorders. Kinesiophobia affects physical functions and QoL in patients with LBP, knee, and ankle disorders. Therefore, the association of pain, physical functions, kinesiophobia, and QoL in LBP, knee, and ankle should be investigated in the future, possibly by exploring other outcomes, to validate the current findings further, which allow for a better understanding of the relationships between these factors.

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