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**Benefits of Home Exercise and Supervised Physiotherapy After Total Knee Arthroplasty in Elderly Patients**

*Benefits Of Home Exercise And Supervised Physical Therapy After Total Knee Arthroplasty In Elderly Patients*

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### Summary

Total knee arthroplasty (TKA) is one of the most frequently performed surgical procedures in the treatment of advanced osteoarthritis, especially in the elderly. Despite its effectiveness in reducing pain and improving function, the success of the surgery depends directly on an appropriate rehabilitation program. The aim of this study was to analyze the benefits of combining home exercises and supervised physiotherapy in functional recovery after TKA. This is a literature review based on recent scientific articles. The results demonstrate that the combination of these strategies promotes significant improvement in range of motion, muscle strength, pain, and functional independence. It is concluded that the integration of supervised physiotherapy and home exercises is essential to optimize clinical and functional outcomes.

**Keywords:** Total knee arthroplasty. Rehabilitation. Physiotherapy. Elderly.

### Abstract

Total knee arthroplasty (TKA) is one of the most frequently performed surgical procedures in the treatment of advanced osteoarthritis, especially in the elderly. Despite its effectiveness in reducing pain and improving function, the success of the surgery depends directly on an appropriate rehabilitation program. The aim of this study was to analyze the benefits of combining home exercises and supervised physiotherapy in functional recovery after TKA. This is a literature review based on recent scientific articles. The results demonstrate that the combination of these strategies promotes significant improvement in range of motion, muscle strength, pain, and functional independence. It is concluded that the integration of supervised physiotherapy and home exercises is essential to optimize clinical and functional outcomes.

**Keywords:** Total knee arthroplasty. Rehabilitation. Physiotherapy. Elderly.

## 1 INTRODUCTION

Knee osteoarthritis is one of the most prevalent musculoskeletal diseases in the elderly population and represents one of the main causes of chronic pain, functional disability and a reduction in quality of life. This is a degenerative condition characterized by degradation, progressive articular cartilage degeneration, associated with changes in the subchondral bone, processes of low-grade inflammation and involvement of periarticular structures, resulting in pain,



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stiffness, limited range of motion, and significant impairment in performing activities of daily life.

With the increasing aging of the global population, an increase is observed. significant in the incidence of osteoarthritis, constituting a relevant health problem. public. In addition to the physical impact, the disease is associated with significant psychosocial repercussions, such as social isolation, loss of autonomy, reduced functional independence, and increased risk. of falls, factors that significantly compromise the well-being and quality of life of elderly individual.

In advanced stages of osteoarthritis, when conservative approaches are ineffective. If satisfactory results are achieved, total knee arthroplasty (TKA) is indicated as a surgical treatment for Choose. This procedure's main goal is to relieve pain and restore alignment. to improve joint function and improve knee function, being widely recognized for its clinical effectiveness and Positive impact on patients' quality of life. However, complete functional recovery. It does not depend exclusively on the surgical act, being directly related to quality. Early implementation and continuity of the rehabilitation process.

In the postoperative period, pain, edema, and muscle weakness are common. significant — especially of the quadriceps muscle — and limitation of range of motion. Evidence suggests that significant loss of muscle strength can occur in the first month after... surgery, which directly impacts the patient's functionality and independence (LEITE et al., 2025). In this sense, physiotherapy rehabilitation becomes essential to restore capacity. functional, promoting safe recovery and enabling a return to activities of daily living.

Post-operative physiotherapy has as its main objectives the reduction of pain and recovery of... joint mobility, muscle strengthening, improved balance, gait retraining and prevention of complications. In this context, different therapeutic strategies can be used, with emphasis on supervised physiotherapy and home exercises. Physiotherapy Supervised performance allows for continuous monitoring by a qualified professional, ensuring proper execution. correct execution of exercises, appropriate progression of loads, and adaptation of treatment accordingly. The patient's clinical progress. In turn, home exercises allow for greater frequency. of therapeutic practice, promoting continuity of treatment and encouraging active participation. of the patient in the rehabilitation process.

The association between these two approaches has been widely discussed in the literature. scientific, especially regarding its effectiveness in the functional recovery of patients. Elderly people undergoing ATJ (Total Daily Living). Recent studies demonstrate that programs that combine supervision... Professionals who perform exercises at home show better clinical results. including improved muscle strength, reduced pain, increased range of motion and greater



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functional independence (OLDRINI et al., 2025; AFTAB et al., 2025).

However, despite advances in the field of rehabilitation, gaps in the literature still exist. Regarding the best way to integrate these strategies and optimize therapeutic outcomes, especially in the elderly population, which has specific characteristics and greater vulnerability. functional. In addition, factors such as adherence to treatment, access to health services and conditions Socioeconomic factors can directly influence rehabilitation outcomes.

Given this scenario, it becomes relevant to analyze the benefits of [something] in an integrated way. Association between home exercises and supervised physiotherapy in the context of post-rehabilitation. Total knee arthroplasty. Thus, the present study aims to analyze, through a review... Integrative literature review: the benefits of this association in the functional recovery of elderly individuals. undergoing total knee arthroplasty.

## 2 LITERATURE REVIEW

Knee osteoarthritis is associated with aging, obesity, and a history of injuries. joint problems. Their main symptoms include pain, joint stiffness, and functional limitation, impacting directly impacts the quality of life of patients.

Total knee arthroplasty promotes improved joint function, however the post-operative period... The surgical procedure presents significant challenges, such as muscle weakness and reduced mobility. The loss Deficiency in quadriceps muscle strength is one of the main limiting factors in functional recovery after TKA (MIZNER; SNYDER-MACKLER, 2017).

Therefore, muscle strengthening combined with functional exercises and gait training... and balance becomes essential for recovery. Recent studies indicate that programs of Rehabilitation programs that combine different therapeutic approaches show better results. functional when compared to isolated interventions (OLDRINI et al., 2025).

## 3 METHODOLOGY

This study is an integrative literature review, whose objective is to gather, analyze, and... synthesize scientific evidence regarding the benefits of combining home exercise and Supervised physiotherapy in the rehabilitation of elderly patients undergoing total knee arthroplasty.

An integrative review allows for the inclusion of studies with different methodological approaches. providing a broad and critical view on the subject. The study was developed following these steps. systematized, including the definition of the guiding question, search strategy, and inclusion criteria. and exclusion, study selection, and data analysis.

Guiding question: What are the benefits of combining home exercise and Supervised physiotherapy in the rehabilitation of elderly patients undergoing total knee arthroplasty?



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The search was conducted in the PubMed, PEDro, and SciELO databases, using descriptors in Portuguese and English combined by Boolean operators.

Studies published between 2020 and 2025, focusing on elderly populations, were included. Post-TKA rehabilitation. Duplicate studies and those without scientific relevance were excluded.

#### 4- IMPORTANCE OF PHYSICAL THERAPY IN REHABILITATION

Physical therapy plays a central and indispensable role in the rehabilitation process after... Total knee arthroplasty, considered one of the main determining factors for success. functional outcome of the surgical procedure. Although total knee arthroplasty (TKA) is effective in reducing pain and improving... Joint function can be compromised by the absence of a structured rehabilitation program. significantly improve clinical outcomes, prolonging recovery time and limiting the Patient independence.

Physiotherapeutic intervention begins in the immediate postoperative period, many often in the first few hours after surgery, with the aim of promoting early mobilization, reducing complications and initiate the functional recovery process. Early mobilization is directly related to this. associated with a reduced risk of complications such as deep vein thrombosis, pulmonary atelectasis, Joint stiffness and accelerated muscle loss, in addition to contributing to improved circulation. blood and tissue oxygenation.

Among the main objectives of physiotherapy in the postoperative period of total knee arthroplasty are the reduction of muscle strain. of pain and edema, recovery of range of motion, muscle strengthening — especially of the quadriceps muscle—, improving balance and proprioception, re-education of walking and the progressive return to activities of daily living. These goals are achieved by through a set of interventions that include active and passive exercises, functional training, Stretching exercises, manual therapy techniques, and educational guidance.

The loss of muscle strength in the postoperative period, especially in the quadriceps, This represents one of the main limiting factors in functional recovery. Studies indicate that this Loss can be significant in the first few weeks after surgery, directly impacting the ability to perform basic activities such as walking, standing up and climbing stairs (LEITE et al., 2025). In this way, progressive muscle strengthening becomes an essential component of rehabilitation.

Furthermore, physiotherapy contributes to the improvement of neuromuscular control and... Joint stability is a fundamental factor in preventing falls, especially in the elderly. Balance and proprioception training allows for greater safety during walking and transfers. reducing the risk of new adverse events.

Another relevant aspect concerns gait retraining, since many patients



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They develop compensatory patterns before surgery due to chronic pain. Physical therapy plays a role in this. Correcting these patterns promotes a more efficient, safe, and functional gait.

The physiotherapy approach also has a significant impact on psychosocial aspects. for the patient. Pain reduction, improved mobility, and increased functional independence. They contribute to increased self-confidence, decreased fear of falling, and improved quality of life. life. In addition, professional guidance promotes emotional support and adherence to life. treatment.

Supervised physiotherapy, in particular, allows for the individualization of treatment. considering the clinical characteristics, functional limitations, and goals of each patient. This Personalization is essential in the elderly population, which frequently presents with comorbidities and greater functional variability.

Finally, it should be noted that physiotherapy should not be understood solely as a complementary intervention, but as an integral and indispensable part of the treatment after Total knee arthroplasty. The absence or inadequacy of rehabilitation can compromise the results. Surgical outcomes, as long as a well-structured and properly conducted program... It enhances functional gains, promotes faster recovery, and significantly improves... quality of life for patients.

## **5 Benefits of Home Workouts**

Home exercises play a key role in the continuity of the process of Rehabilitation after total knee arthroplasty, especially in the elderly population. This strategy allows the patient to maintain the frequency and regularity of therapeutic stimuli outside of clinical setting, contributing directly to the consolidation of gains obtained during the sessions. supervised physiotherapy.

Performing exercises at home promotes the maintenance and progression of range of motion. It allows for movement, preventing joint stiffness and promoting greater flexibility in the operated knee. In addition, progressive muscle strengthening, especially of the quadriceps muscles, Hamstring and gluteal muscle development is enhanced by frequent repetition of the exercises, which contributes to... Joint stability, improved motor control, and greater safety during walking.

Another important benefit relates to the improvement of blood and lymphatic circulation, helping in reducing edema and pain in the postoperative period. Regular exercise also It contributes to the prevention of complications such as deep vein thrombosis and bone loss. muscular.

From a functional point of view, home exercises promote significant improvement in performing activities of daily living, such as walking, sitting, standing, and climbing stairs, making



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The most effective and functional rehabilitation.

Furthermore, they promote greater autonomy, adherence to treatment, and active participation of the patient.

The patient benefits, especially because the procedures are performed in a familiar environment, reducing barriers to access.

However, it is essential that these exercises be guided by a professional, because...

Improper execution can compromise therapeutic outcomes.

## **6 FUNCTIONAL RESULTS**

Physiotherapeutic rehabilitation after total knee arthroplasty is directly associated with improvement in several clinical and functional outcomes. Among the main results observed key features include increased muscle strength, especially in the quadriceps muscle, and recovery from... increased range of motion in the knee, reduction of pain and swelling, and significant improvement in... functional capacity and independence in activities of daily living.

The recovery of gait represents one of the main milestones in the rehabilitation process. Patients undergoing structured physiotherapy programs show progressive improvement in gait speed, gait pattern, and stability during movement. These gains are directly related to muscle strengthening, balance training, and... neuromuscular control.

Furthermore, a significant improvement is observed in the performance of functional activities, such as getting up from a chair, going up and down stairs, and performing transfers. These aspects are... These factors are fundamental to the independence of elderly patients and are directly linked to their quality of life.

Another relevant point refers to the reduction of postoperative pain, which contributes to greater patient participation in the rehabilitation process. Pain reduction is associated with both... Physiotherapeutic interventions aimed at increasing mobility and muscle strength.

Recent studies indicate that patients who participate in programs that combine supervised physiotherapy and home exercises yield better functional results... when compared to those who only use one of the approaches. This combination is advantageous... both the quality and frequency of the intervention, enhancing clinical outcomes (AFTAB) et al., 2025; OLDRINI et al., 2025).

In addition to physical benefits, there is a positive impact on quality of life, including improvements in... Psychological well-being, increased self-confidence, and greater social participation.

## **7 DISCUSSION**

Rehabilitation after total knee arthroplasty is a complex and multifactorial process, which... It involves not only the recovery of muscle strength, but also the restoration of mobility... joint function, balance, coordination, and overall functional capacity. In this context, physiotherapy



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plays an essential role in optimizing postoperative results, especially when initiated early and conducted in a structured manner.

Supervised physiotherapy stands out for providing professional monitoring, continuous, allowing for the correct execution of exercises, the proper progression of loads, and Treatment is adapted according to the patient's clinical progress. This monitoring is This is particularly important in the elderly population, which frequently presents with comorbidities. Functional limitations and a higher risk of complications require an individualized and safe approach.

On the other hand, home exercises are a fundamental strategy to ensure the Continuity of treatment outside the clinical setting. The possibility of performing exercises with greater Frequency contributes significantly to the maintenance and progression of gains obtained in supervised sessions. In addition, home-based practice promotes patient engagement, promoting greater autonomy and active participation in the rehabilitation process.

Recent studies indicate that strengthening muscles, especially the quadriceps, is a of the main components of postoperative rehabilitation. However, evidence shows that, Although strengthening exercises are effective in improving muscle strength, their effects on pain and Functionality can vary when analyzed in isolation (LEITE et al., 2025). This finding This reinforces the need for a comprehensive therapeutic approach that combines different modalities. intervention.

In this sense, the literature indicates that rehabilitation programs that combine physiotherapy Supervised home-based exercises show better clinical and functional outcomes. when compared to isolated interventions (OLDRINI et al., 2025). This combination allows combining the safety and technical control of professional supervision with the greatest frequency and continuity. provided by the home environment.

In addition to the physical benefits, rehabilitation also has a significant impact on other aspects. psychosocial benefits for the patient. Improved self-confidence, reduced fear of falling, and increased... Functional independence are factors that directly contribute to the quality of life of older adults. In this context, exercising at home can reduce anxiety and To increase comfort, promoting greater adherence to treatment.

However, home-based physiotherapy also has limitations. The absence of supervision. Continuous use can compromise the proper execution of exercises, increasing the risk of Inadequate compensations and potential injuries. Furthermore, factors such as low motivation, Cognitive difficulties and lack of family support can negatively interfere with adherence to treatment.

Another relevant aspect refers to the heterogeneity of the rehabilitation protocols described. in the literature, which makes it difficult to standardize interventions and directly compare studies.



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Still, there is a consensus that structured, individualized, and progressive programs are more effective. effective in promoting functional recovery.

Thus, the findings of this review reinforce the association between physiotherapy. Supervised home-based exercises represent the most appropriate strategy for rehabilitation. after total knee arthroplasty in elderly patients. This integrated approach allows for maximizing the... clinical results, promote greater adherence to treatment, and contribute to a faster recovery. fast and effective.

## 8. FINAL CONSIDERATIONS

Total knee arthroplasty is an effective procedure in the treatment of advanced osteoarthritis. providing significant improvement in pain and joint function. However, recovery The patient's functional capacity depends directly on the quality and continuity of the rehabilitation process. physiotherapy.

Analysis of the literature shows that the association between supervised physiotherapy and Home-based exercises represent the most effective strategy for rehabilitation after total knee arthroplasty (TKA). especially in the elderly population. This integrated approach allows for maximizing the gains. functional, promote greater adherence to treatment, and ensure greater safety during recovery.

Home exercises play a key role in the continuity of treatment. while supervised physiotherapy ensures correct execution, proper progression and Individualization of therapeutic interventions.

Therefore, it can be concluded that rehabilitation programs that integrate these two strategies They are essential for promoting faster, more efficient, and lasting recovery, contributing significantly improves the quality of life for patients.

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