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Collaborative Physiotherapy and Nursing Interventions in Postoperative Recovery: A Systematic Review of Patient Outcomes

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ABSTRACT: Postoperative recovery is a multifactorial process, and it is necessary to coordinate clinical interventions for recovery and rehabilitation in order to restore patients' physical functions and reduce postoperative complications, pain, and to achieve a good quality of life. Physiotherapists and nurses work together and complement each other in providing early mobilisation, respiratory rehabilitation, pain management, monitoring wounds, educating patients, functional rehabilitation and psychological support for optimal recovery. This systematic review aims to assess the impact of collaborative physiotherapy and nursing care on postoperative outcomes, focusing on recovery time, postoperative complications, functional independence, reduction of pain, hospital stay and satisfaction levels. The synthesis is based on relevant literature regarding: multidisciplinary postoperative care, enhanced recovery after surgery (ERAS),

early mobilization, respiratory physiotherapy, and nurse-led recovery interventions. It has been found that systematic physiotherapy and nursing care has beneficial effects on postoperative mobility, respiratory function, functional recovery and the prevention of complications of immobility. Early mobilization, structured rehabilitation, good pain assessment, respiratory exercises and ongoing nursing surveillance are especially vital parts of a successful rehabilitation. However, the results depend on the surgical technique, individual factors, the intensity of the intervention, the availability of staff, and the resources of the institution. Standardised interdisciplinary communication and personalised plans for rehabilitation are also demonstrated as essential. The review concludes that structured postoperative pathways that incorporate physiotherapy and nursing interventions are an important way of enhancing patient outcomes. Additional well-designed comparative studies needed to determine the effectiveness, timing, and cost-effectiveness of specific collaborative interventions for various surgical patient groups.

1. INTRODUCTION

The postoperative period is a pivotal stage in medical care following surgery, where patients move from undergoing surgical procedures to the goal of restoration, physiological stability, and optimal self-care. Despite the development of surgical techniques, anaesthetic and perioperative medicine, surgical complications are still significant issues in healthcare. Patients can suffer from pain, limited mobility, respiratory issues, wound infection, delayed healing, venous thromboembolism, muscle weakness, and psychological stress (Long Holt, 2026). These complications can extend hospital length of stay, cost of care and impact quality of life. Due to this, comprehensive care plans are needed following surgery to ensure both acute physiological recovery and chronic rehabilitation are managed.

Two important professions associated with postoperative care are physiotherapy and nursing. The main principles of physiotherapy are the restoration of movement, improvement of physical capacity, prevention of functional deterioration and facilitation of independence by therapeutic exercises, respiratory rehabilitation, mobilization and functional training. The nursing interventions are supplementary to these activities, which involve continuous assessment of the patient, pain management, administration of medication, management of wounds, monitoring of physiological parameters, patient education, emotional support and co-ordination of clinical services (Onyenanu, 2025). Both careers have similar goals of safe recovery and decreased postoperative complications, albeit in different ways.

Physiotherapist and nurse collaboration is a critical aspect especially for early postoperative mobilisation. Major surgery may be associated with the risk of muscle deconditioning and decreased cardiovascular capacity, pulmonary dysfunction, and the development of thromboembolic complications with prolonged bed rest. Physiotherapists offer structured mobilization and exercise therapies and nurses keep an eye on tolerance, clinical stability, pain management and reinforce recommendations for mobility during the day. The coordinated approach can increase consistency of the rehabilitation process and minimize disruption of rehabilitation activities. The Multidisciplinary Management of Postoperative Management (MMPM) has gained weight with the implementation of Enhanced Recovery After Surgery (ERAS). ERAS pathways combine evidence-based interventions utilizing the preoperative, intraoperative, and postoperative phases in order to diminish surgical stress and hasten recovery (Yadav, 2026). Typical components of their post surgical care involve early mobilization, optimizing their nutrition, making sure they are getting the right pain medicine, respiratory care, and getting back to normal activity levels as early as possible. These interventions are effective, in part, due to the close cooperation between surgeons, anaesthetists, nurses, physiotherapists, dietitians and other health care professionals.

Late mobilization and the use of multidisciplinary rehabilitation in postoperative care have been proven in previous studies. The ERAS literature, for instance, highlights the role of the coordinated peri-operative interventions in the reduction of recovery delays, and on the improvement of clinical outcomes. Similarly, research on POST has focused on breathing exercises, airway clearance, and mobilization as means of strengthening pulmonary function. Nursing research also has focused on surveillance, patient education, pain assessment and continuity of care to prevent complications and to aid recovery. Nevertheless, the integration of physiotherapists and nurses is not always done in a systematic way. Professional

Communications, insufficient staffing, lack of rehabilitation resources, unclear roles, and inconsistent mobilization procedures can jeopardize the ability to deliver coordinated care (Caffoy, 2025). Moreover, postoperative treatments are sometimes undertaken without the use of any integrated recovery plan. This breaks down communication to the patient, slows down mobilisation, limits the ability to manage their symptoms, and misses the opportunity to provide rehabilitation.

Therefore, it is crucial to grasp the synergy between physiotherapy and nursing in order to optimize postoperative care. A focus on the individual roles of these professions has already been the subject of substantial research, while exploring their complementary functions can give a more holistic view of the impact of interdisciplinary interventions on patients' outcomes.

This is a systematic review that explores the connection between collaborative physiotherapy and nursing interventions, and postoperative patient outcomes (Hamza, 2025). In particular, the review assesses the effectiveness of interdisciplinary interventions in pain management, pulmonary function, restoration of mobility, prevention of post-surgical complications, hospital stay, functional independence and patient satisfaction. It also pinpoints the challenges and opportunities to improve collaborative postoperative rehabilitation.

2. METHODOLOGY

2.1 Research Design

The systematic literature review method was used to explore the role of collaborative physiotherapy and nursing care in the recovery and outcomes of postoperative patients. The review brings together data from randomized controlled trials, systematic reviews, meta-analyses, observational studies and pertinent clinical guidelines on multidisciplinary postoperative care. A narrative synthesis using a structured approach is used to detect commonalities, contrast intervention methods and assess the clinical relevance of combining physiotherapy and nursing methods.

The review is specific to adult patients who are having an operation, such as laparotomy (abdominal surgery), orthopaedics, cardiothoracic, or general surgical procedures. Studies focused on the coordinated rehabilitation, early mobilization, respiratory physiotherapy, pain management, nursing surveillance, wound management, and patient education are focused.

2.2 Literature Search Strategy

Literature searches were conducted in biomedical and health research databases, such as PubMed/MEDLINE, CINAHL, the Cochrane Library, PEDro, Scopus, and Google Scholar databases. The search strategy was directed to publications in the area of postoperative rehabilitation, nursing interventions, interdisciplinary collaboration, and clinical recovery outcomes.

Various combinations of the following keywords were used as search terms: collaborative physiotherapy, postoperative nursing care, postoperative rehabilitation, early mobilization, respiratory physiotherapy, multidisciplinary postoperative care, enhanced recovery after surgery, nursing interventions, functional recovery, and postoperative patient outcomes.

Boolean operators were deemed to be useful in linking related concepts and to help in identifying relevant publications. For instance, the search terms "physiotherapy AND nursing AND postoperative recovery" were used to find studies that included both interprofessional rehabilitation and the separate elements of physiotherapy and nursing, and the term "early mobilization AND postoperative complications" was used to find studies that included both early mobilization and postoperative complications.

The literature synthesis includes only recent publications that contain evidence, and it also includes earlier randomized trials and foundational studies that have important information regarding postoperative rehabilitation.

2.3 Inclusion and Exclusion Criteria

Any study which assessed physiotherapy or nursing interventions or combined interventions was included in the review. Randomized controlled trials, systematic reviews, meta-analyses, prospective and retrospective observational studies and evidence-based clinical guidelines were eligible publications.

For the studies to be considered relevant, they included at least one postoperative outcome, such as intensity of pain, respiratory complications, mobility, functional independence, wound healing, hospital length of stay, readmission, patient satisfaction, or health-related quality of life. Studies focusing on adult surgical patients were given priority as there are significant differences between patient age groups in terms of postoperative rehabilitation needs and recovery outcomes.

Studies that only discuss the preoperative preparation and not report any related postoperative implications were not included in the synthesis. Any publications that did not relate to physiotherapy, nursing care, surgical recovery or patient outcomes following surgery were also not included. Articles that were opinion pieces and lacked clinical or research evidence were not considered primary evidence.

2.4 Study Selection and Evidence Appraisal

The selection process consisted of finding appropriate publications, on the basis of their title and abstract, screening them according to the review purposes, and determining the full-text search results of papers that met the criteria. There was a special focus on research design, the characteristics of the samples, descriptions of the intervention, outcome measures, follow-up periods, and application of the findings to collaborative postoperative care.

The effectiveness of the interventions was evaluated more heavily using randomized controlled trials and systematic reviews. Additional information regarding implementation, continuity of care, professional responsibilities and multi-disciplinary practice was obtained from observational studies and clinical guidelines.

Methodological weaknesses, such as small numbers, uneven surgical techniques, varying rehabilitation methods, intensity of interventions, and possible bias were also taken into account in the interpretation of the evidence. The considerations were significant since the results of one surgical population might not be applicable to all postoperative patients.

2.5 Data Extraction and Organization

Information was structured by publication features, design, surgical population, intervention type, role of the professionals, and patient outcomes. The key intervention categories were early mobilization, respiratory rehabilitation, pain management, functional exercise, wound care, patient education and monitoring and follow-up after surgery.

The review also explored the interaction that physiotherapists and nurses had in the provision of these interventions. Physiotherapy-related activities involved mobility assessment, therapeutic exercise, breathing exercise, gait training and functional rehabilitation. Nursing activities were categorized as continuous assessment, administration of analgesics, surveillance of wounds, monitor vital signs, patient education and reinforcement of rehabilitation recommendations. Information relating to outcomes was categorized into clinical recovery, physical functioning, postoperative complications, healthcare utilization, and patient-reported outcomes.

2.6 Data Synthesis and Analysis

To combine results from studies that used different research designs, surgical populations and outcome measures, a narrative synthesis approach was used. Results of existing systematic reviews and meta-analyses were included where possible, but were not re-calculated due to the variability of interventions and clinical populations in the available evidence.

The synthesis analyzed similarities and differences in the outcomes reported and focused specifically on whether the coordinated physiotherapy and nursing activities led to better recovery than those that were more disjointed or routine after surgery.

The results were presented in each of the six themes: functional mobility and physical recovery, rehabilitation for the respiratory system, pain control, prevention of postoperative complications, hospital stay and patient satisfaction/quality of life. Interdisciplinary communication, barriers to implementation, and opportunities for enhancing collaborative practice were also considered.

2.7 Methodological Limitations

The review has limitations due to differences in surgical techniques, patient characteristics, post-surgical rehabilitation methods, and measures of outcomes. Moreover, physical therapy or nursing intervention was being studied independently of physiotherapy combined with nursing intervention. The evidence base for the individual components of the intervention is therefore stronger compared to the evidence for the extra benefit of physiotherapist–nurse collaboration.

3. FINDINGS AND DISCUSSION

3.1 Collaborative Physiotherapy and Nursing Interventions in Postoperative Functional Recovery

The reviewed evidence supports physiotherapy and nursing interventions complementing the post-op functional recovery. The physiotherapists focus primarily on the progressive mobilization, therapeutic exercise, gait training, balance activities and functional rehabilitation of the patient, so as to restore physical activity as rapidly as possible. Nurses facilitate these activities by checking a patient's physiological status, assessing pain, aiding transfers, giving postoperative education and encouraging patients to perform prescribed rehabilitation activities (Hussein, 2025). The importance of early mobilization is especially significant as surgical and anaesthetic procedures, pain and prolonged inactivity can contribute to muscle weakness and decreased exercise tolerance, and limit functional independence. Sequenced rehab helps patients take their first steps from sitting to standing to walking and to engaging in activities of daily living (ADLs) as needed.

A physiotherapist may evaluate the mobility and provide a customized rehab program and the nursing team carries out the program as part of the normal postoperative care. For instance, physiotherapist might start off gradual walking and functions workout exercises after abdominal surgery, while nurses might observe pain, dizziness, fatigue, and physiological tolerance in subsequent mobility activities. This provides continuity of the formal rehabilitation sessions with the normal nursing care. A postoperative physiotherapy review in a 2025 enhanced recovery pathway (ERP) review showed improvements in walking distance, attainment of activities of daily living and hospital stay. There was mixed evidence, however, on readiness for discharge, quality of recovery and health-related quality of life, reflecting that gains in some functional outcomes do not consistently relate to gains in other recovery outcomes (Khan, 2025). The results highlight the need to avoid rehabilitation in isolation after surgery. Rather, a shared goal for functional recovery should be set by the nurse and the physiotherapist, and progress should be discussed and rehabilitation programs modified based on clinical assessment.

3.2 Respiratory Rehabilitation and Prevention of Pulmonary Complications

Respiratory complications are an important source of morbidity after surgery especially after abdominal, thoracic and upper gastrointestinal surgery. Impaired ventilation, secretion stasis, atelectasis, and respiratory infections may be a result of general anaesthesia, postoperative pain, decreased chest expansion and prolonged immobility. Physiotherapists have a role in the process of recovery from the respiratory system by doing breathing exercises, thoracic expansion exercises, supported coughing, airway clearance if indicated, progressive physical mobilisation (Al Hammas, 2025). These interventions are complemented by nurses who perform respiratory assessments, monitor oxygenation, position patients appropriately, manage pain, educate patients and reinforce prescribed breathing activities. There is a considerable amount of evidence on the effectiveness of this collaborative approach with regard to perioperative respiratory physiotherapy.

In 2026, a large systematic review and meta-analysis were published that included 55,260 patients in 255 randomized trials who had abdominal surgery. Analysis reported that physiotherapy interventions improved postoperative pulmonary complications (pooled risk ratio 0.55, 95% CI: 0.46–0.65), in 36 trials with 4,854 participants. This is a significant decrease in the relative risk of lung problems. The overall physiotherapy evidence was examined and rated as moderate certainty. Breathing exercises were another category of interventions found to be beneficial in the same review, but with less certain evidence. The results confirm the value of a structured respiratory rehabilitation program, but also highlight the need to examine the individual techniques based on the clinical circumstances. The importance of physiotherapy education before surgery was also highlighted by Wang (2026), through a multicentre randomized controlled trial. A total of 441 adults undergoing major elective upper abdominal surgery participated in the trial, and the effect of a single session of physiotherapy, which included education and breathing exercise training, on postoperative pulmonary complications was investigated.

This is confirmed by another individual patient data meta-analysis from two RCTs in 2024, which included 800 patients. Patients who were given education and breathing exercise training prior to surgery had 47% less chance of postoperative pulmonary complications (adjusted OR 0.53, 95% CI: 0.34–0.85). For patients with multiple comorbidities, a shorter hospital stay was also associated with preoperatively administered physiotherapy, but effects on mortality were unclear (2024 individual participant data meta-analysis). These results illustrate that the use of respiratory rehabilitation should be part of a comprehensive perioperative approach, and not initiated when complications arise (Al Muhamidh, 2025). Specialist respiratory rehab is provided by physiotherapists and Nurses ensure ongoing observation and reinforcement of appropriate interventions.

3.3 Pain Management and Its Influence on Rehabilitation Participation

Patients' willingness and ability to undertake rehabilitation depends largely on postoperative pain. Uncontrolled pain can limit deep breathing, coughing, movement, walking, and therapeutic exercises. It can also cause anxiety and slow down the return to normal functioning. The nurses are involved in the assessment of pain, administering of prescribed analgesics, and monitoring the effect and adverse effects of analgesics. Physiotherapists play a role in adapting rehabilitation activities to the level of pain experienced by patients, ensuring appropriate positioning, support of movement and educating patients about the link between controlled discomfort, safe movement and recovery (Alghabbashi 2025). In particular, when rehabilitation plans are made with attention to pain management, it is especially important that they are done in collaboration. For instance, after orthopaedic surgery, the nurse might check pain and give prescribed pain medications prior to an appointment scheduled for physiotherapy. The physiotherapist can then proceed to the appropriate activities for mobility and strengthening, while taking into consideration the patient's tolerance.

The 2026 systematic review of perioperative interventions provides evidence for the value of using analgesics to lower the risk of PPCs. Analgesic interventions were associated with a reduction in risk ratio of 0.73 (95% CI: 0.64-0.84), and there was moderate certainty of evidence. The results suggest that good pain control can be used to aid recovery from respiratory conditions and functional rehabilitation. Therefore, the understanding of pain management is not a responsibility that is only carried out by nurses but is part of interdisciplinary rehabilitation (Asmirajanti, 2018). Assessment and communication are coordinated so that the health care team can recognise if pain is not being adequately controlled and adjust the activities of recovery as needed.

3.4 Prevention of Postoperative Complications through Coordinated Care

Complications following surgery can lead to a longer recovery period, higher healthcare expenses, and unplanned readmissions. These are common complications: respiratory infections, wound infections, venous thromboembolism, pressure injuries, delayed functional restoration and reduced mobility. Complementary interventions are a role of physiotherapists and nurses in helping to prevent complications. Physiotherapy supports respiratory function, promotes movement and improves physical function (Almutairi, 2025). Nursing interventions are centred on clinical surveillance, wound assessment, prevention of infection, pressure area care, administration of medicines and early detection of deterioration.

Following orthopaedic surgery in the lower limbs, for instance, physiotherapists might be involved with progressive mobility and functional rehabilitation, whilst nurses would keep a check on the surgical site, pain and swelling, adherence to mobility precautions, and for complications. The coordination of these activities will facilitate rehabilitation along with clinical monitoring, as appropriate. The respiratory complications are of special interest. A 2026 meta-analysis of 255 trials showed that physiotherapy, analgesia, lung-protective ventilation and nutritional interventions were all linked to decreases in postoperative pulmonary complications (Zhang, 2024). Moderate-certainty evidence was found for physiotherapy, and lower-certainty evidence was found for some specific interventions involving breathing exercises.

Furthermore, a systematic review of the postoperative respiratory and mobilization interventions of 25 studies and 2068 patients was performed to investigate the influence of various respiratory support and exercise strategies after abdominal surgery. It speculated that high ER modalities may have fewer pulmonary complications, but the authors cautioned that the necessary information size for TSA was not achieved. This is an example of the need to be cautious in interpreting results specific to the intervention. Nursing interventions are also crucial in the prevention of complications after cardiac surgery. The systematic review of nurse-led postoperative interventions published in 2026 comprised 19 randomized controlled trials (RCTs), 3,142 participants, and trials conducted in 13 countries. These interventions included pain and symptom control, wound care, infection prevention, respiratory function, mobilization, hydration, and patient comfort (Rao, 2021). Only 2 nurse-led interventions were assessed as having a low risk of bias in the review; these interventions generally were feasible and had a positive effect on some aspects of postoperative recovery. In combination these results show that an integrated approach between rehabilitation and on-going nursing surveillance is needed for complication prevention. If patient safety and functional recovery require a coordinated approach, neither discipline should go it alone.

3.5 Hospital Length of Stay and Healthcare Utilization

The LOS in a hospital is a significant measure of the recovery period after surgery and resource utilization in health care systems. Delayed mobilization, lack of control of pain, respiratory issues, wound concerns and lack of functional independence can all delay the discharge. Proper physiotherapy and nursing management can help prevent serious clinical complications and be a part of early functional recovery, thus reducing hospital stays (Liu, 2023). Physiotherapists assess mobility, readiness for activity and functional capacity and nurses keep monitoring recovery and relay this to others in the healthcare team who may be involved in discharge planning.

In enhanced recovery pathways, more effort is made to get patients moving as soon as they are able to do so after they have been operated on safely, and to get them up to normal daily activities. This will involve ongoing communication and coordination between rehabilitation practitioners and nurses to ensure patients are provided with the same instructions and support when they are hospitalised. Evidence for the benefits of postoperative physiotherapy following enhanced recovery pathways was reported in the review undertaken in 2025 – these included increased walking distance, activities of daily living and hospital length of stay (Shi, 2024). However, the outcome on readiness for discharge was mixed suggesting that length of stay is affected by more factors than just physical rehabilitation.

Likewise, in the 2024 IPD meta analysis, patients with multiple comorbidities who underwent physiotherapy prior to surgery saw an estimated 3.2-day decrease in hospital stay when compared to the respective control group (adjusted mean difference −3.2 days, 95% CI −6.2 to −0.3). Structured physiotherapy preparation may be especially advantageous for some higher-risk surgical groups, this finding indicates. However, it is not the only measure of successful postoperative rehabilitation (Alanazi, 2024). Physiological stability, functional safety, adequate symptom control, patient confidence and availability of appropriate post-discharge support should also be taken into account when discharging a patient.

3.6 Patient Satisfaction, Psychological Well-being, and Quality of Life

There are three aspects to recovery after surgery: physical, psychological, and social. Patients can have a sense of uncertainty, anxiety, decreased confidence, temporary reliance and fear of returning to normal life. Effective communication and patient-centered support are thus essential parts of recovery. Nurses make continuous interaction and emotional support during hospitalization, and physiotherapists help patients to understand their physical progress and gain confidence to move and functional activity (Hakami, 2024). Together, patient education can enhance patient understanding of the goals of rehabilitation, recovery path, precautions for mobility, and self-management.

Patients who have had a major abdominal surgery might be worried about movement at first due to discomfort around the area of surgery. Nurses can educate patients on the need to adhere to the activity plan following surgery and physiotherapists can show patients the correct way to move and gradually introduce functional exercises. A 2026 systematic review revealed positive outcomes in the areas of comfort, physiological stability, symptom relief, and functional recovery, when nurse-led postoperative cardiac care was implemented (Alruwaili, 2024). The review, however, also reported that there was a lack of randomized evidence to support more general patient-reported outcomes, indicating that the impact of nursing interventions on more general patient-reported outcomes needs to be explored further.

Similarly, there was conflicting evidence about quality of recovery and health-related quality of life for the 2025 review of postoperative physiotherapy in enhanced recovery pathways. This indicates that there is not a one-to-one relationship between increases in mobility and increases in all aspects of patient well being. As a result, Collaborative Post-operative care needs to incorporate patient-reported outcome measures, satisfaction assessment, functional independence assessment and psychological support (Li, 2022). These measures help to gain a more holistic picture of recovery beyond the clinical measures.

3.7 The Role of Enhanced Recovery after Surgery in Interdisciplinary Collaboration

The integrated role of physiotherapy and nursing within the structured postoperative care framework of Enhanced Recovery After Surgery is important. ERAS highlights multidisciplinary, evidence-based interventions for minimising surgical stress, sustaining physiological function, promoting early recovery and supporting safe discharge (Valkenet, 2011). Common postoperative elements of ERAS are early mobilization, optimal pain management, respiratory rehabilitation, nutritional support, complication prevention and return to normal activity.

We conducted a scoping review of systematic reviews to identify the in patient perioperative interventions and found 190 systematic reviews in ten intervention themes. A total of 39% of the included reviews were about enhanced recovery after surgery. Additional themes were nutritional intervention, respiratory care, physical activity/exercise, physiotherapy and comprehensive geriatric assessment. The results provide an abundant proof of the evidence for multidisciplinary perioperative management. Physiotherapy and nursing can be better integrated to ERAS pathways to increase the consistency of care delivery. Shared protocols set expectations regarding patient mobilization, rehabilitation, pain assessment, respiratory support and clinical monitoring (Kamade, 2025). However, if proper steps are not taken, ERAS can be ineffective. Healthcare organizations need to make sure that the professionals are aware of their duties, understand relevant clinical data and can communicate effectively regarding the progress of patients.

3.8 Summary of Major Findings

The evidence reviewed highlights a number of significant relationships between collaborative interventions after surgery and outcomes.

Table 1. Major collaborative physiotherapy and nursing interventions and their expected postoperative outcomes

Intervention area	Physiotherapy contribution	Nursing contribution	Principal patient outcomes
Early mobilization	Walking, transfers, gait and functional training	Monitoring, assistance, reinforcement of mobility plans	Improved mobility and functional independence
Respiratory rehabilitation	Breathing exercises, airway clearance and respiratory training	Respiratory assessment, positioning and monitoring	Reduced risk of pulmonary complications
Pain management	Activity modification and rehabilitation support	Pain assessment and prescribed analgesia	Improved rehabilitation participation
Complication prevention	Progressive exercise and mobility rehabilitation	Wound surveillance, infection prevention and clinical monitoring	Improved patient safety
Functional recovery	Strengthening, balance and activities of daily living	Assistance with routine activities and self-care education	Greater independence
Patient education	Movement techniques and rehabilitation guidance	Continuous education and emotional support	Improved confidence and self-management
Discharge preparation	Functional assessment and mobility recommendations	Discharge coordination and continuity of care	Safer transition from hospital

Source: Author's synthesis of the reviewed literature.

Table 2. Selected empirical evidence supporting postoperative physiotherapy and nursing interventions

Study/evidence source	Design and population	Main findings	Implications
Boden et al. (2018)	Multicentre randomized trial; 441 abdominal surgery patients	Examined preoperative physiotherapy education and breathing exercises	Supports respiratory preparation and early postoperative activity
2024 individual participant data meta-analysis	Two randomized trials; 800 patients	47% lower adjusted odds of pulmonary complications with preoperative physiotherapy	Supports targeted physiotherapy preparation
2025 postoperative physiotherapy review	Systematic review of ERAS pathways	Benefits in walking distance, activities of daily living and length of stay	Supports structured postoperative rehabilitation

2026 pulmonary complications review	255 trials; 55,260 participants	Physiotherapy RR 0.55 (95% CI 0.46–0.65)	Supports physiotherapy for pulmonary complication prevention
2026 nurse-led cardiac surgery review	19 randomized trials; 3,142 participants	Positive effects on comfort, symptom relief and aspects of functional recovery	Supports structured nursing interventions

Source: Author's synthesis based on the cited publications.

3.9 Conceptual Framework for Collaborative Postoperative Recovery

The results show that the physiotherapy interventions, nursing interventions, interdisciplinary coordination and patient factors are closely linked with each other in affecting the postoperative recovery of patients. The physiotherapy and nursing interventions support in complementary ways. The role of Physiotherapy is mainly for physical restoration, the role of Nursing is mainly for clinical stability, continuity of care, symptoms and engagement with patient (Koudouna, 2023). These activities are linked together through interdisciplinary coordination and allow for targeted interventions and ongoing monitoring of recovery.

Figure 1. Conceptual framework linking collaborative physiotherapy and nursing interventions to postoperative patient outcomes

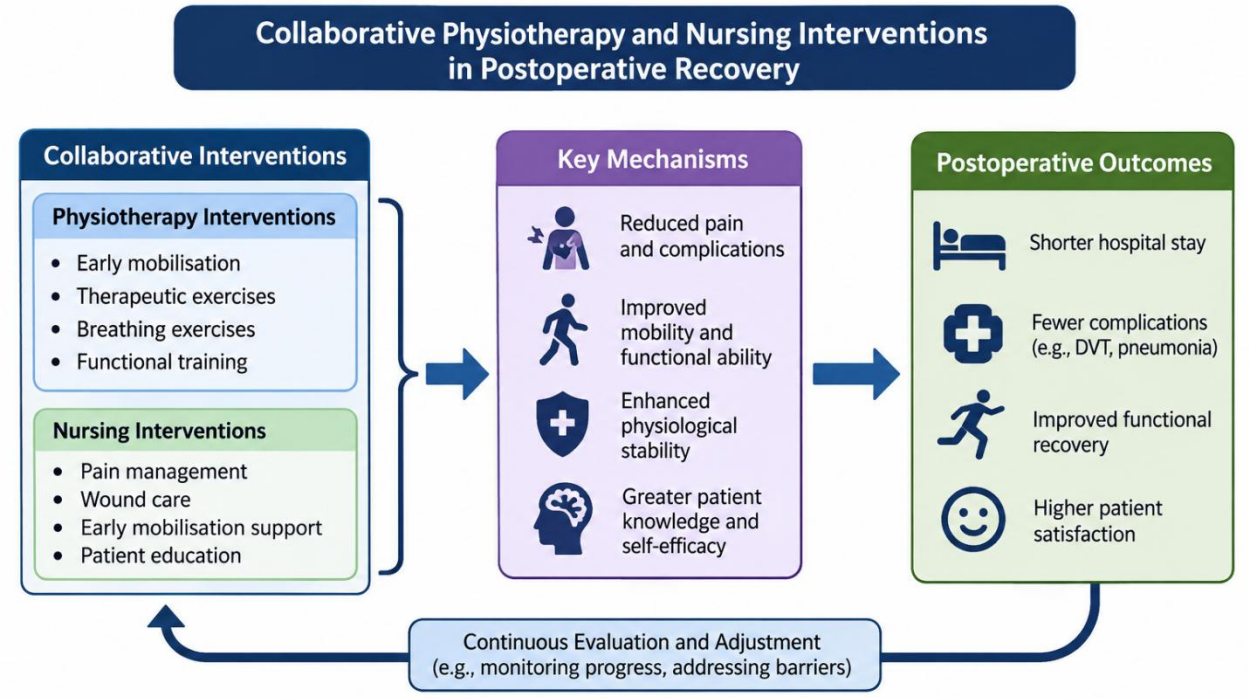


Figure 1. *Conceptual framework linking collaborative physiotherapy and nursing interventions to postoperative patient outcomes.*

Source: Developed by the author from the thematic synthesis of the reviewed literature.

The conceptual framework shows that the collaboration is the key mechanism which links physiotherapy and nursing care to postoperative outcomes (Sarkies, 2023). It also acknowledges that the effectiveness of the interventions can be a function of patient characteristics and institutional conditions.

3.10 Challenges Affecting Collaborative Physiotherapy and Nursing Interventions

Although there are potential advantages of interprofessional postoperative care, there are a number of challenges that may hinder the ability to integrate the care of physiotherapy and nursing.

Poor staffing and workload are serious obstacles. Health-care professionals frequently have several patients and various clinical demands, and physiotherapists may be short of time for repeated rehabilitation sessions. Therefore, patients can have variable amounts of assistance, depending on the provider, with mobilization, exercise and postoperative education (Dhillon, 2023).

Interdisciplinary communication can also be a source of poor coordination. Fragmentation of information about patient progress, mobility limitations, pain and rehabilitation goals between physiotherapists and nurses can lead to interventions becoming fragmented. There may also be uncertainty regarding the professional responsibilities and rehabilitation priorities due to inconsistent communication (Nilsson, 2020).

The availability of rehabilitation equipment and institutional resources may also limit the delivery of rehabilitation services, especially in resource-limited health care facilities. The lack of suitable mobility equipment, space for rehabilitation, monitoring equipment, and a structured postoperative protocol may diminish the effectiveness of rehabilitation programmes (Jakobsen, 2021).

Patient barriers are also significant. Factors associated with participation include postoperative pain, fatigue, anxiety, fear of movement, advanced age, preexisting medical conditions, and insufficient knowledge of the rehabilitation needs (Rhamelani, 2025). Individual approaches to patient education and appropriate symptom management, coupled with ongoing professional support, are needed.

The lack of standardized interdisciplinary protocols could also play a role in variations in clinical practice. Postoperative care may vary in consistency when it comes to healthcare institutions with unclear mobilization schedules, respiratory rehabilitation procedures, pain assessment protocols and discharge criteria (Saripella, 2021).

Implementing solutions to these challenges will require the support of institutional investment in interdisciplinary training, of staffing, of interdisciplinary clinical pathways, and of communication systems. There can also be regular multidisciplinary meetings, and patient recovery documentation can be shared that could help strengthen coordination (Aprisunadi, 2023).

3.11 Clinical and Policy Implications

The results are clinically relevant, and relevant to health care management, education of professionals and policy makers.

Healthcare facilities should aim to incorporate physiotherapy and nursing care into standardized postoperative care pathways, in order to begin with. Such pathways should set clear rehabilitation goals, monitoring, mobilization and discharge preparation requirements (Ahmed, 2024).

Second, there should be greater interdisciplinary communication via a shared care plan, frequent clinical communication and consistent documentation. This would enable nurses/physiotherapists to track patients progress in a consistent way and detect any complications early (Long Holt, 2026).

Third, early rehabilitation education should be the priority for hospitals. There should be a provision of adequate information to the patients regarding postoperative mobility, respiratory exercises, pain management, and functional recovery before and after surgery. Involving patients in recovery planning may improve their understanding and participation (Onyenanu, 2025).

Fourth, there is a need to invest in ongoing professional development initiatives to reinforce the knowledge of the nurses and physiotherapists about inter-disciplinary postoperative management. Role clarification, communication, decision making and patient safety can be enhanced through joint training activities (Yadav, 2026).

Lastly, healthcare policy makers should take note of the fact that post-operative rehabilitation should be seen as a necessary part of surgical care and not an extra service. Especially in resource-poor areas, where limited physiotherapy services and low levels of nursing resources can contribute to delayed healing and preventable complications (Caffoy, 2025).

3.12 Research Gaps and Future Research Directions

While there is evidence for a number of isolated physiotherapy and nursing interventions, there are significant knowledge gaps in how these interventions work together. One drawback is the limited number of studies that directly compare the physiotherapist–nurse collaborative interventions to the separate provision of physiotherapy and/or usual postoperative care. Previous research often assesses only specific components, and it can be challenging to assess if there are any added benefits from interdisciplinary collaboration in addition to the effects of the interventions. Randomized controlled trials and pragmatic clinical studies that assess coordinated physiotherapy and nursing programmes in various surgical populations should be the focus of future studies (Hamza, 2025). Both clinical and patient-reported outcomes should be studied, such as functional independence, pain, respiratory complications, hospital re-hospitalization, quality of life and patient satisfaction.

There is a need for more elderly, patients with multiple comorbidities and more patients undergoing complex surgical procedures. These populations may require different rehabilitation requirements and may react differently to a standardized postoperative rehabilitation. Additionally, researchers are needed to explore the cost-effectiveness of collaborative rehabilitation, especially in health care environments with limited staffing and rehabilitation services. Models of implementation that are clinically effective and economically sustainable can be identified through a comparative study across public and private hospitals. Digital health technologies also offer opportunities to enhance the interdisciplinary follow-up of patients after surgery (Hussein, 2025). There are advantages of electronic rehab records, remote monitoring, digital patient education and structured communication platforms to help reduce communication and continuity of care between hospital based rehab and nursing staff. Their efficacy should be tested with sound clinical studies, however.

3.13 Overall Interpretation of the Evidence

Consideration of the overall evidence shows that physiotherapy and nursing care interventions have a complementary role in postoperative recovery. Physiotherapy plays a significant role in restoring a person's physical condition and mobility, respiratory rehabilitation and independence of function, whilst nursing interventions are important in providing clinical monitoring, pain relief, wound care, patient education and continuity of care. However, the evidence is stronger for the effect that physiotherapy can have in reducing pulmonary complications after an abdominal operation (Khan, 2025). The 2026 meta-analysis quantitatively supports this relationship between a patient's pain and the length of recovery time, and the 2024 individual participant data meta-analysis shows that physiotherapy education and breathing exercise training can have a potential effect.

There is also evidence of the value of nurse-led interventions in symptom management, comfort of the patient, wound care, and some aspects of functional recovery, especially for cardiac surgery patients. However, evidence is still mixed, and few studies directly link the extra clinical advantage of formal physiotherapist–nurse collaboration (Al Hammas, 2025). A crucial point thus needs to be distinguished between evidence on the effectiveness of individual interventions and evidence about added value of interdisciplinary integration. The former is gaining momentum but the latter needs more head-to-head comparison.

Overall, it suggests that postoperative recovery should be handled in a coordinated and patient-centred way where physiotherapists and nurses work together to achieve common goals and utilize their respective skills in the care of the patient. This partnership creates a clinically relevant structure to enhance the continuity of rehabilitation, the safety of patients, and their functional recovery.

4. CONCLUSION

The aim of this systematic review was to explore the role of collaborative physiotherapy and nursing care in the postoperative recovery and outcome. The results demonstrate that physiotherapy and nursing care within coordinated postoperative pathways has the potential to aid functional restoration, enhance mobility, assist with the rehabilitation of the respiratory function, maintain effective pain management and contribute to postoperative complications prevention. The physiotherapist's contribution to therapeutic exercise, early mobilization as well as to respiratory rehabilitation and functional training, and the nurse's contribution to the continuous clinical monitoring, pain assessment, management of wounds, education and reinforcement of rehab activities are important. There is also some evidence that structured physiotherapy interventions can decrease postoperative pulmonary complications and perhaps can enhance selected aspects of hospital recovery. Moreover, nurse-led interventions play a role in the comfort of the patient, in dealing with symptoms, and in some

elements of functional recovery. Yet, factors such as staffing, limited resources, communication challenges, patient factors, and differing rehabilitation protocols could affect how well collaborative care works. Important, however, while there is evidence of a number of single physiotherapy and nursing interventions, a number of additional studies are required to determine the extra value of formal physiotherapist–nurse programmes. Therefore, the healthcare institutions should increase the communication between the various disciplines, develop uniform postoperative rehabilitation programs, invest in qualified training, and emphasize tailored patient-centered care. In summary, the role of collaborative physiotherapy and nursing care is a significant aspect of a patient's postoperative care plan and has the potential to substantially enhance the safety, functional independence and quality of surgical recovery for patients.

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