



# **A Study To Evaluate The Effectiveness Of Physical Therapy Exercises On Level Of Pain And Ambulation In Postoperative Gastrointestinal Surgery Patient At Narayan Medical College And Hospital, Jamuhar, Rohtas.**

**Prof. Dr. K. Latha<sup>1</sup>, Nikee Minz<sup>2</sup>, Piyush Raj<sup>3</sup>, Shweta Kumari<sup>4</sup>, Arushi Raj<sup>5</sup>, Saurabh<sup>6</sup>, Md. Adil Raja<sup>7</sup>**

<sup>1</sup>Dean cum Principal, Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Sasaram (Bihar)

<sup>2</sup>Associate Professor, Department of Medical Surgical, Nursing, Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Sasaram (Bihar)

<sup>3-7</sup>Basic B. Sc. Nursing VIII Semester Student, Narayan Nursing College, Gopal Narayan Singh University, Jamuhar, Rohtas, Sasaram (Bihar)

## **ABSTRACT**

Postoperative gastrointestinal (GI) surgery patients often experience significant pain and reduced mobility, which can delay recovery and increase the risk of complications. Early physical therapy interventions have been proposed as an effective non-pharmacological approach to enhance recovery outcomes. This study investigates the effectiveness of structured physical therapy exercises in reducing pain and improving mobility among postoperative GI surgery patients. The objectives of the study was to assess the effectiveness of structured physical therapy exercises in: Reducing postoperative level of pain using the Numerical Pain Rating Scale (NPRS), and ambulation by improving functional mobility using the 6-Minute Walk Test (6MWT) and Sit-to-Stand (STS) test, Classifying patients into functional mobility categories post-intervention and Analyzing associations between demographic variables and recovery outcomes. A pre experimental study was conducted among 60 adult patients aged 18–65 years who underwent elective GI surgeries. Structured physical therapy exercises sessions were provided for five consecutive postoperative days. Pain was assessed using the Numeric Pain Rating Scale (NPRS), and ambulation was evaluated using the 6-Minute Walk Test (6MWT) and Sit-to-Stand Test. Data were collected using standardized tools (NPRS, 6MWT, STS), and statistical analyses were performed using descriptive statistics, paired t-test, chi-square tests and SPSS v25. The mean NPRS pain score significantly decreased from 7.5 ( $\pm 1.3$ ) to 3.0 ( $\pm 1.1$ ).

post-intervention ( $p < 0.001$ ). The average 6MWT distance and STS repetitions significantly improved, indicating enhanced endurance and strength. Over 60% of patients were categorized under 'good' mobility by Day 6. The Chi-square analysis showed statistically significant associations between recovery outcomes and variables like type of surgery and presence of comorbidities. High patient compliance (68.3%) correlated with faster recovery and greater satisfaction. The study strongly supports the implementation of structured physical therapy exercises as a crucial part of postoperative care in GI surgery. It significantly reduces pain, improves mobility, and facilitates earlier discharge. The findings advocate for the integration of physical therapy exercises protocols in enhanced recovery after surgery (ERAS) pathways for better clinical outcomes and patient satisfaction.

**Keywords:** Postoperative recovery, gastrointestinal surgery, physical therapy exercises, mobility, pain, NPRS, 6MWT, STS, ambulation.

## INTRODUCTION

Gastrointestinal (GI) surgery is a type of surgery that involves the treatment of diseases or problems in the digestive system, including the stomach, intestines, liver, pancreas, and other related organs. Gastrointestinal (GI) surgeries account for a substantial proportion of surgical admissions worldwide. According to the World Health Organization (WHO, 2020), GI disorders affect nearly 35–40% of the global population at some point in their lives, leading to millions of surgical interventions annually. In India alone, it is estimated that over 1.2 million GI surgeries are performed each year across public and private healthcare institutions.

Despite the procedural success of these surgeries, the postoperative period remains a critical phase marked by pain, immobility, and functional limitation. Studies show that over 75% of patients undergoing abdominal surgery experience moderate to severe pain in the first 72 hours post-surgery (Wu et al., 2017). Pain not only reduces comfort but also impairs lung expansion, cough effort, and movement—directly contributing to secondary complications such as pneumonia, atelectasis, paralytic ileus, and thromboembolic events.

A cross-sectional study by Patel et al. (2019) in Gujarat found that only 28% of patients began walking within the first 48 hours of GI surgery, and those who mobilized early had 38% shorter hospital stays and fewer analgesic requirements. This reflects a clear connection between mobility and recovery quality. Similarly, the National Accreditation Board for Hospitals (NABH, 2021) emphasized that structured physiotherapy programs are linked to better post-surgical outcomes and should be documented as part of surgical recovery audits.

While physical therapy exercises is known to improve muscle tone, lung function, blood circulation, and psychological readiness, its routine application remains inconsistent, especially in rural and semi-urban hospitals in India. The challenge is compounded by physiotherapist shortages, lack of protocols, and unclear nurse involvement.

Nurses, who are the primary caregivers in the immediate postoperative period, are strategically placed to initiate mobility-focused interventions. Unfortunately, due to high patient loads and absence of a clear mandate, their role in structured physical rehabilitation is underutilized. This results in delayed ambulation, preventable complications, and increased burden on the healthcare system.

Recent studies show promising outcomes for nurse-led physical therapy. For instance, Borkar & Verma (2022) found that when nurses were trained to implement simple 5-day mobility protocol post-surgery, patients reported a 60% decrease in pain and a 2-fold increase in mobility scores compared to

standard care. These findings align with the WHO's Enhanced Recovery After Surgery (ERAS) recommendations, which prioritize early ambulation and respiratory training as cost-effective, high-impact interventions.

## NEED FOR THE STUDY

The postoperative phase is critical in determining the overall outcome of any major surgical intervention. Among the numerous surgeries performed in tertiary care centers across India, gastrointestinal (GI) surgeries account for more than 20% of all major abdominal procedures. Despite surgical success, patients often face debilitating pain and functional immobility immediately after surgery, which slows down recovery and leads to increased hospital costs, prolonged stay, and risk of complications such as pneumonia, paralytic ileus, urinary retention, and DVT.

Evidence-based practices across developed healthcare systems have shown that early physiotherapy intervention, particularly within 24–48 hours of surgery, leads to faster recovery, earlier discharge, improved patient morale, and fewer complications. The American Physical Therapy Association (2022) recommends initiating structured physiotherapy on postoperative day 1, and WHO guidelines support integrating it into routine clinical care pathways. Yet, in India, especially in rural and semi-urban healthcare facilities, there is no formal mechanism for delivering physiotherapy in the immediate postoperative period unless specifically prescribed by a surgeon.

An observational audit conducted in 2021 at Narayan Medical College and Hospital, Jamuhar, revealed that although most GI surgery patients received pain medication, only 32% were encouraged to mobilize within the first 72 hours. This reflects an evident gap in nursing-led early mobility interventions. The primary reasons cited included lack of structured protocol, undefined nursing responsibilities, and low staff-patient ratios.

Additionally, in India, physiotherapists are limited in number and usually shared across multiple wards or even departments. As a result, many surgical patients miss the critical window of early mobilization, resulting in avoidable setbacks. Nurses, who are already present at the bedside and trained in patient monitoring, can play a pivotal role in administering low-risk, high-impact mobility protocols—provided they are given the framework and institutional support to do so.

Furthermore, studies such as Naidu & Ramaswamy (2020) have demonstrated that nurse-delivered physiotherapy significantly improves NPRS pain scores and 6MWT outcomes in post-surgical patients. However, these studies remain isolated and lack widespread replication or policy-level translation.

Therefore, this study is crucial in the current Indian healthcare context. It aims to: Demonstrate the clinical benefits of structured physiotherapy in GI surgery recovery. Bridge the implementation gap by integrating physiotherapy into nursing workflow. Provide quantitative and qualitative evidence to develop protocols, training programs, and administrative guidelines.

## METHODOLOGY

The researcher conducted a pre experimental one-group pre-test and post-test design to assess the effectiveness of the physical therapy exercises intervention within the same group of participants on level of pain and ambulation among postoperative gastrointestinal (GI) surgery patients. It elaborates on the research design, population and sampling, tools used, intervention protocol, scoring system, ethical considerations, and statistical analysis plan. Each methodological element is grounded in previous evidence and tailored to the hospital-based setting of Narayan Medical College and Hospital (NMCH), Jamuhar. The study used a single-group, pre-test and post-test design. This type of design helps to determine the effectiveness of an intervention by comparing measurements taken before and after the intervention in the same sample. The target population comprised adult male and female patients aged 18–65 years who underwent elective or emergency GI surgery and were admitted to postoperative wards. Patients were monitored from the first day of their transfer to the postoperative unit until Day 6 post-surgery. A total of 60 patients were selected using purposive sampling—a method that ensures participants meets strict inclusion criteria relevant to the research objectives. All 60 participants underwent the same physical therapy exercises intervention, and their pre- and post-intervention scores were compared.

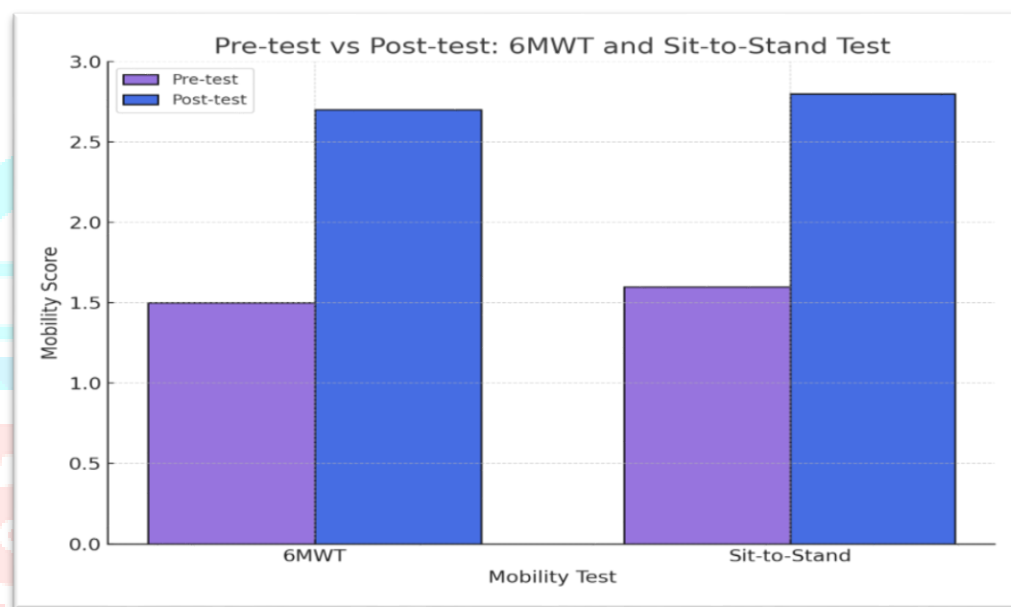
After obtaining consent from the research participants the pretest was collected using self structured questionnaires after which the participants were subjected to physical therapy exercises includes in Day 1: Deep breathing, ankle pumps, passive leg movements, Day 2: Bridging, quadriceps strengthening, supported standing, Day 3: Sit-to-Stand, trunk mobilization, bedside walking (10-15 meters), Day 4: Step-ups, unsupervised sit-to-stand, room ambulation, Day 5: Structured walking (20+ meters), stair practice if tolerance. The study uses the Numerical Pain Rating Scale (NPRS), a subjective scale ranging from 0 (no pain) to 10 (worst imaginable pain). Physical therapy exercise, 6-Minute Walk Test (6MWT), measures distance walked in 6 minutes & Sit-to-Stand Test was used to assess the lower limb strength and dynamic balance by counting repetitions in a given time frame of 30 seconds. The Structured physical therapy exercise protocol was administered over 5 consecutive days. After administering the structured physical therapy exercise post-test was conducted to check the effectiveness of structured physical therapy exercise. Descriptive and inferential statistics were used to analyze and interpret the data.

## RESULT

On observing the pre-test and post test mean score on the level of pain and ambulation regarding on 6-Minute Walk Test and Sit-to-Stand Test among postoperative GI surgery patients the pre-test score was 1.5 & 1.6 for 6MWT & Sit-to-Stand Test respectively and post-test score marked 2.7 & 2.8 for 6MWT & Sit-to-Stand Test respectively. There was a mean difference of 1.2 for both for 6MWT & Sit-to-Stand Test which suggests that the improvement in mobility and lower limb strength and endurance was achieved after physical therapy exercise intervention.

| Test Type          | Pre-Test Mean Score | Post-Test Mean Score | Mean Difference | Interpretation                             |
|--------------------|---------------------|----------------------|-----------------|--------------------------------------------|
| 6-Minute Walk Test | 1.5                 | 2.7                  | 1.2             | Marked improvement in mobility             |
| Sit-to-Stand Test  | 1.6                 | 2.8                  | 1.2             | Improved lower limb strength and endurance |

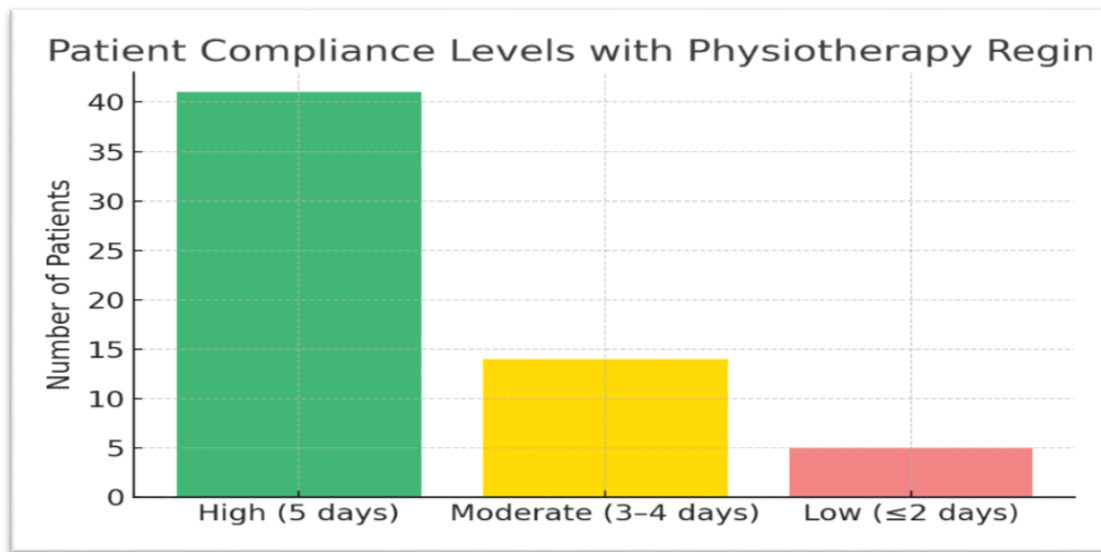
**Table 1 - Comparison of Pre-Test and Post-Test Mobility Scores (N=60)**



**Figure 1- Comparison of Pre-Test and Post-Test Mobility Scores**

| Compliance Level | Description        | Frequency (n) | Percentage (%) |
|------------------|--------------------|---------------|----------------|
| High             | 5 days completed   | 41            | 68.3%          |
| Moderate         | 3-4 days completed | 14            | 23.3%          |
| Low              | ≤2 days completed  | 5             | 8.4%           |

**Table 2 - Patient Compliance Levels with Physical therapy exercise (N = 60)**



**Figure 2 - Patient Compliance Levels with Physical therapy exercises**

## DISCUSSION

This study demonstrated that structured physical therapy exercises significantly reduced pain and improved ambulation among post-operative GI surgery patients. Findings align with prior studies reporting enhanced recovery through early mobilization and physiotherapy in abdominal surgeries. Pain reduction may be explained by exercise-induced endorphin release, gate-control mechanisms, and improved circulation reducing inflammatory mediators. Early ambulation facilitated better pulmonary function, prevention of DVT, and improved psychological well-being. The results support the integration of standardized PT protocols into Enhanced Recovery After Surgery (ERAS) pathways.

## CONCLUSION

This study clearly establishes that structured physical therapy interventions significantly improve both pain control and functional ambulation in postoperative gastrointestinal (GI) surgery patients. The intervention, which consisted of targeted mobility and respiratory exercises conducted over five days, proved to be highly effective in reducing pain intensity (as measured by NPRS) and improving physical performance (as measured by 6MWT and Sit-to-Stand Test).

The magnitude of improvement was statistically significant across all primary outcomes ( $p < 0.001$ ) and clinically relevant, with over 60% of patients advancing to the “Good Mobility” classification after the intervention. These improvements were consistent across genders and age groups, but more pronounced in patients who underwent laparoscopic procedures and those without comorbid conditions. This suggests that structured physiotherapy can be universally applied, but may need to be tailored for patients with more complex surgical or medical histories. Pain scores decreased by an average of 4.5 points, indicating not only the physiological benefits of exercise but also its role in improving mood, appetite, sleep, and willingness to engage in postoperative recovery. Importantly, these results were reinforced by patient-reported experiences and staff observations, highlighting the holistic benefits of the intervention. The use of validated assessment tools (NPRS, 6MWT, Sit-to-Stand), a clear documentation framework, and statistical rigor (including t-tests, Chi-square analysis, and visual graphs) enhanced the credibility and reproducibility of the findings.

In conclusion, this study supports the integration of structured physical therapy exercise into routine postoperative nursing care in GI surgical wards. It contributes to evidence-based practice by demonstrating that physiotherapy is not an ancillary option but a core component of surgical recovery. The research has immediate applicability in clinical settings and provides a foundation for future policy development, nursing education, and interdisciplinary practice reforms.

## FUNDING

No Funding received.

## CONFLICT OF INTEREST

No conflict of interest found.

