Keele UNIVERSITY

Impact Accelerator Unit

Keele Critically Appraised Topic (CAT Form)

Clinical question

Do patients who attend prehabilitation sessions prior to lower limb joint replacement surgery have a reduced length of stay/less post operative problems/improved post operative outcomes?

Clinical bottom line

Although prehabilitation was associated with improvement in several preoperative outcomes, the quality of evidence for postoperative outcomes was low to very low.

Despite the current limitations in evidence, both the National Institute for Health and Care Excellence (NICE) and the Getting It Right First Time (GIRFT) team recommend prehabilitation, especially for hip and knee replacement patients, based on clinical expertise and potential benefits. As research and standardization improve, the impact of prehabilitation on postoperative outcomes may become clearer. For now, its introduction should be done thoughtfully, with an emphasis on quality improvement and ongoing evaluation.

Plain language summary

National healthcare guidelines suggest that people should get help to be healthier before having hip or knee joint replacement surgery. This is called prehabilitation. It could help patients get better faster after the surgery.

Expert health care professionals recommend prehabilitation because they believe it works, even though there isn't a lot of strong research about it. Since we don't have a lot of good studies, it's important to be careful when starting prehabilitation. What this means is we should make sure it's done the same way for everyone, keep making it better, and always check how well it's working.

Jenny Borley, (jenny.borley@nhs.net), Kirsty Elson, Tina Hadley-Barrows, Pam Collins Completed January 2024

Why is this important?

Prehabilitation is an umbrella term for various elements of support offered to patients to improve and optimise their health and wellbeing prior to surgery. These elements include health education, smoking cessation, weight management, healthy eating, exercise/improved mobility, and pain management. Patients may access this support via organised sessions which may be called 'surgery school', 'joint school' or prehabilitation.

Prehabilitation is highlighted as an essential component of elective hip and knee replacement pathways in the latest guide for Orthopaedic Elective Surgery published by the Getting It Right First Time team (GIRFT) 2023 & National Institute for Health and Care Excellence (NICE, 2020), however, at present, there is no formal prehabilitation provision for elective lower limb arthroplasty patients at our local NHS Trust. Given both NICE and GIRFT recommendations a review of the evidence base was essential to support its development and introduction. Understanding the beneficial effects of prehabilitation and exploring if there are existing models of care providing positive health outcomes is important when developing safe and effective care pathways and in service redesign.

Search timeframe - Inclusive 2010-2023

Search criteria

Population Intervention Comparison Outcomes (PICO) themes	**Description**	**Search terms**
Population and Setting	Adults who have had hip or knee replacement surgery.	Adults Total knee replacement Total knee arthroplasty Primary knee replacement Primary knee arthroplasty Knee surgery TKR Total hip replacement Total hip arthroplasty Primary hip replacement Primary hip arthroplasty Hip surgery THR Lower limb joint replacement surgery Lower extremity
Intervention or Exposure	Pre-operative health education, smoking cessation, weight management, healthy eating, exercise/improved mobility, pain management.	Prehabilitation Surgery school Joint School Pre-operative education, interventions, information, learning, optimisation, strength training Physical training Physical education Exercise Physical therapy Physiotherapy Smoking cessation Weight loss Goal setting Expectation management Equipment provision and education of use Stair's practice Preoperative gait re-education Written information

		Patient information leaflets/booklets Online information/videos Face to face clinics/appointments/ consultations Virtual clinics/appointments/ consultations Pre-operative exercise Pre-operative assessment Multi-disciplinary preoperative information sessions Health literacy Information literacy Preoperative education Preoperative period Patient information Health education Health knowledge Health understanding Remote consultation
Comparison	Usual care. No additional intervention.	Usual care No prehabilitation No additional pre-operative interventions Written information leaflets Standard care Normal care
Outcomes of interest	Length of stay, readmission rates, post operative complications, pain management, functional recovery, and outcomes.	Length of stay Reduced length of stay Readmission rates Functional outcomes Functional recovery Range of movement Pain scores Post-operative complications Patient satisfaction Informed patients Meeting of expectations Prepared Patient reported outcomes. Patient outcomes Treatment outcomes

		Patient reported outcome measures (PROM) Quality of life
Types of studies e.g. Randomised Controlled Trails, Systematic reviews	Research, RTC, SR.	Research Randomised Controlled Trial Systematic Review

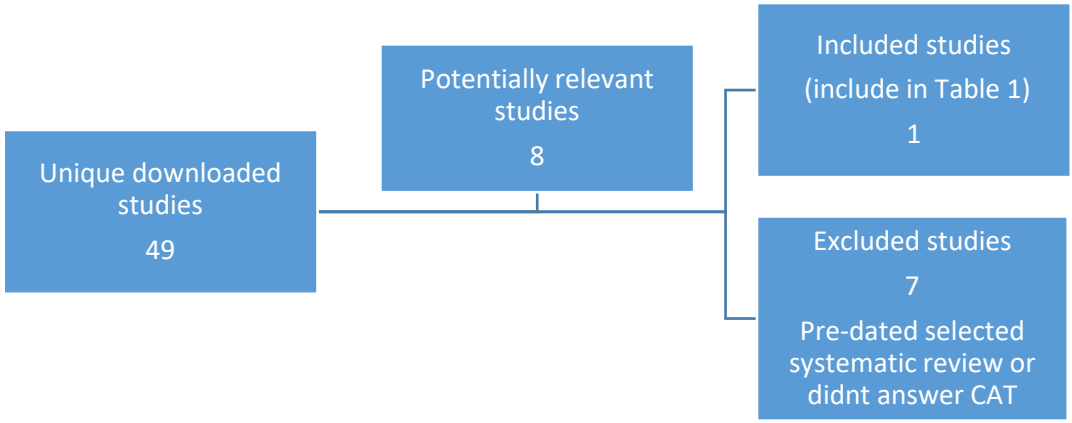
Databases searched

Cochrane library, TRIP, NICE, Medline, Cinahl, Embase, Emcare, AMED, Joanna Briggs Institute, Ortho Evidence, Epistemonikos, Web of Science, Google scholar, GIRFT,

Date of search

July 23rd 2023

Results of the search: include the number in each box



There were 49 unique downloaded studies. There were 8 relevant studies. There was 1 included and their critical appraisal is included in Table 1. There were 7 excluded studies.

Table 1- Detail of included studies

First author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
Prehabilitation for Patients Undergoing Orthopaedic Surgery	Studies excluded no-English publications	Comparing prehabilitation, including multimodal interventions with usual care.	Postoperatively, moderate-certainty evidence favouring prehabilitation was reported for	Only 10 trials had low overall risk of bias. In light of study heterogeneity overall evidence

A Systematic Review and Meta-analysis A. Punnoose 2023.	48 unique trials involving over 18 yrs. Patients receiving Prehabilitation prior to Orthopaedic Surgery. Also included patients with back pain	Prehabilitation interventions included exercises, pain management, other adjunct therapies such as acupuncture or electrical stimulation. Pain, muscle strength, function.	function at 6 weeks in patients undergoing TKR and at 6 months.	graded as low to very low for post-operative outcomes. Some wide confidence intervals seen on forest plots in supplementary sheets. All-important outcomes considered. Research could be duplicated for local population. Outcomes identify benefits with no risks.

Summary

This CAT process identified a good systematic review with meta-analysis however, although prehabilitation was associated with improvement in several preoperative outcomes, the quality of evidence for postoperative outcomes was low to very low.

They identified variables such as types of surgical procedure, postoperative pain management, and variability in rehabilitation services on discharge from the acute setting can influence postoperative recovery and length of stay, and therefore cannot be attributable to prehabilitation alone. In addition, there were wide variations in the content and delivery of prehabilitation programmes which further compounds the ability to draw strong conclusions. In view of this and acknowledging the GIRFT recommendation for the use of prehabilitation programmes for patients undergoing hip and knee replacement surgery, NICE guidelines (NG157) were further reviewed.

NICE (2020) consensus committee concluded that despite poor evidence with regards to individualised prehabilitation programmes, preoperative rehabilitation advice to people having primary hip or knee replacement surgery should be tailored to individual patient's needs. Prehabilitation reportedly helps to prepare people for surgery, increases their ability to manage any complications of surgery, promotes understanding and engagement with postoperative rehabilitation and prepares people for life with a joint replacement. It also has the potential to lead to reductions in length of hospital stay which could be clinically and cost effective to NHS care (GIRFT, 2023; NICE, 2020).

The NICE committee stated a minimum set of areas that should be covered such as exercise advice, lifestyle advice, and advice about maximising functional independence and quality of life before and after surgery. This would include mobility independence.

Implications for practice

In view of low-quality research evidence and lack of defined multi modal prehabilitation patient pathways, further research is required. If prehabilitation is introduced in line with the recommendations by NICE and GIRFT, it should be done so as part of a quality improvement programme or audit cycle and include patient experience and feedback for ongoing evaluation.

What would you post on X (previously Twitter)?

Defined multi modal prehabilitation in lower limb joint surgical pathways requires further high-quality evidence to demonstrate effectiveness and efficiencies in patient care.

References

Punnoose, A., et al (2023). Prehabilitation for Patients Undergoing Orthopedic Surgery. A Systematic Review and Meta-analysis. https://pubmed.ncbi.nlm.nih.gov/37052919/ accessed July 2023.

GIRFT Ambulatory Hip and Knee replacement guide 2023 https://gettingitrightfirsttime.co.uk/wp-content/uploads/2023/07/Ambulatory-Hip-and-Knee-Replacement-Guide-March-2023-FINAL-V1-1.pdf

Overview | Joint replacement (primary): hip, knee and shoulder | Guidance | NICE

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CAT image	Evidence quality	Checkbox
	Good quality evidence to support use….	☐
	**Insufficient or poor quality evidence** OR substantial harms suggest intervention used with caution after discussion with patient…	☑
	No good quality evidence, do not use until further research is conducted OR Good quality evidence to indicate that harms outweigh the benefits….	☐

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