Keele UNIVERSITY

Impact Accelerator Unit

Keele Critically Appraised Topic (CAT Form)

Specific question

In adults post Primary Total Hip Replacement (THR) does the absence of hip precautions (HP) improve length of stay and quality of life without an increase in complications post operatively?

Clinical bottom line

There is moderate quality evidence supporting the removal of hip precautions (HP) in the post-operative management of Primary Total Hip Replacement (THR), resulting in reduced length of stay and improved quality of life without increasing complication rates.

Currently, no high-quality evidence exists to support the continued use of HP, for all surgical approaches, as an effective strategy of reducing the risk of hip dislocation.

Therefore, we recommend the routine practice of using HP for all Primary THR patients post op should be discontinued and only used at the surgeon's discretion for individual patients who are found to have reduced joint stability during surgery.

Plain Language Summary

Total Hip Replacements (THRs) are performed daily in the NHS and private hospitals across the United Kingdom (UK). Using hip movement limitations after surgery to reduce the risk of dislocation of the hip replacement has been common practice for many years, however this can affect how long a patient stays in hospital, the overall cost of the surgery and recovery time. This CAT question was done to review the evidence supporting the continued use of HP. Our findings show that stopping HP as routine practice did not increase risk to patients.

Why is this important?

Total Hip Replacement (THR) arthroplasty is a common surgical procedure in the UK. According to the UK National Hip Joint Registry approximately 1.5 million primary THRs were performed between April 2023-March 2024 (21st Annual report 2024).

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Historically, dislocation has been considered one of the most common complications following a THR, with reported rates between 0.12% and 16.13% (cited Guo *et al.,* 2024). To minimise this risk post-operative HP have been an established component of patient care. However, a recent review by Getting it Right First Time (GIRFT), Machin *et al.,* (2022) found that routine HP did not reduce dislocation rates or improve patient outcomes, prompting us to re-evaluate our practice.

At a large NHS acute provider organisation in the North Midlands our routine practice is to teach HP. These precautions include avoiding hip flexion past 90 degrees, hip adduction past midline, and hip internal rotation. To comply, patients are required to complete a pre-operative questionnaire to collect measurements for safe seating heights. This information helps therapy staff determine the provision of equipment needed for home to support these precautions for at least six weeks post-operatively.

Equipment provision typically includes items such as raised toilet seats or perching stools but may also involve modifying existing furniture such as raising beds and chairs. This may require the addition of an external company or a therapy environmental visit. The resource demand for this process, both in terms of cost and staff time is significant. Delays in providing more complex or costly equipment can postpone patient discharge and increase hospital length of stay. Prolonged hospitalisation is associated with a higher risk of post-operative complications, such as infections, and is counterproductive to the principle that home care is best care when it comes to patient recovery (Rosman 2015).

Patient experiences with HP have shown considerable variability. Some do not adhere to the guidance but recover well without complication and often demonstrate enhanced recovery. In contrast, patients who strictly follow HP may develop a fear of movement leading to reduced mobility. This can prolong their rehabilitation and increase demands on family and care support services. As a result, reintegration into everyday life and societal roles may be delayed. This can further burden economic and social care systems (Lightfoot 2021).

It is therefore essential to review the evidence around HP to ensure adherence to best practice and optimisation of patient care. With increasing pressure on the NHS to deliver cost effective and efficient services we must critically evaluate whether current practices are supported by strong evidence. Continuing to uphold practices that lack robust evidential support can result in unnecessary resource use, prolonged hospital stays and delays in rehabilitation and discharge.

A critical appraisal of HP could help to streamline care pathways, reduce unwarranted variation in care, enable better allocation of clinical time, equipment and funding. Ultimately this will contribute to sustainability in the NHS and help build greater resilience of our healthcare services.

Search timeframe & Criteria

2015 – April 2025 **Exclusions:** Non-English Language, children, revision surgery

Population Intervention Comparison Outcomes (PICO) themes	Description	Search terms
Population and Setting E.g. adults with OA, primary care	Adults with Primary THR	Primary Elective (OA, RA) Arthroplasty, Replacement, Hip Hip Replacement / THR Total Hip Arthroplasty /THA Hip replacement surgery Hip joint replacement Hip joint arthroplasty Secondary Care
Intervention or Exposure (i.e. what is being tested) e.g. manual therapy	Post op total hip precautions: > limiting hip Flexion beyond 90 degrees, hip adduction past neutral, and twisting of the leg in or out. > For minimum of 6 weeks	Hip Precaution Assistive device Occupational therapy equipment
Comparison, if any e.g. usual care, leaflet	No precautions or restrictions: > To hip range of movement > Functional activities	Usual care / Usual treatment Standard care Post operative care / period
Outcomes of interest e.g. Visual analogue scale, Range of motion	Dislocation rate post operatively Quality of life Post op complications Hospital length of stay Package of care needs post discharge Costing of care within primary and secondary	Post-operative complications Cost-Benefit analysis Cost effective care Health care cost Cost saving Length of say Hospitalisation / Hospitalised Treatment outcome / Outcome assessment Patient reported outcome measures Quality of life Activities of daily living / Daily life activity
Types of studies e.g. Randomised Controlled Trials, Systematic reviews	Systematic Reviews Meta-Analysis Studies RCT's	Systematic Reviews Meta-Analysis Studies RCT's National UK Surveys

Databases searched

MEDLINE, Embase, CINAHL, TRIP Pro, the NHS Knowledge and Library Hub, and Emcare.

Date of search

24th April 2025

Results of Search

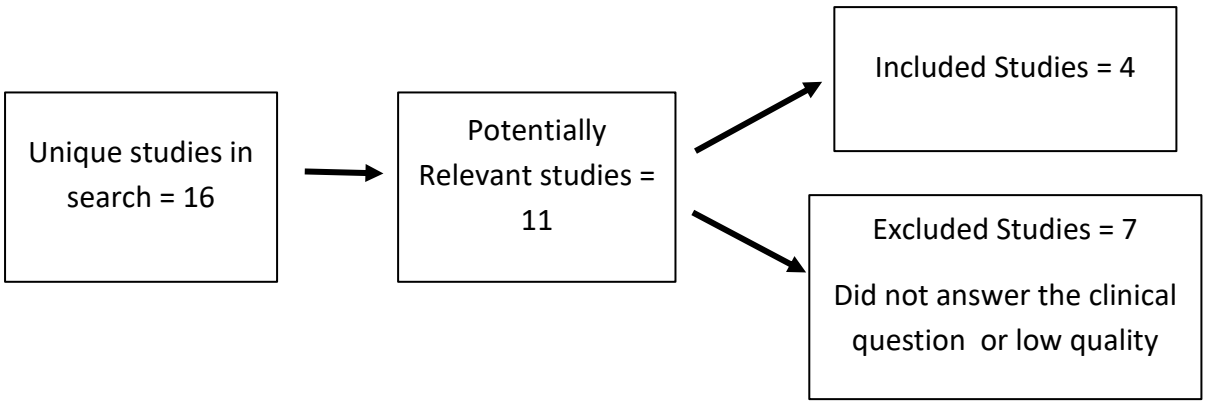

Table 1- Detail of included studies

First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
Guo *et al.*, (2024) Systematic Review & Meta-analysis *RCT's Included: Dietz et al (2019) Mounts et al (2022), Tetreault et al 2020*	Adults who underwent an initial THA with posterior approach. Excluded non elective THR, and non-primary THR, hemiarthroplasty, cognitive impairment, neuromuscular dysfunction,	RCT trials of HP after THA up to July 2023 were searched in 3 databases (PubMed, Embase, and Cochrane Library). By 2 authors with a 3rd author used for final opinion if required. Primary outcome of hip dislocation events over a follow up of 6 weeks or more.	The literature search identified 54 relevant papers/trials, of these 19 duplications were removed. Of the 35 remaining only 3 met the eligibility criteria The 3 studies had a combined sample size of	The Cochrane Risk of Bias Assessment tool 2.0 was used to evaluate the quality of the literature. All 3 studies were high quality with a low risk of bias in randomisation process, missing outcome data, measurement of outcome, and selection of reported results. Deviations from

	and substance abuse.	Secondary outcomes of Hip disability and Osteoarthritis Outcome Score joint replacement (HOOS JR) and time to discontinuation of walking aids. HP group in all studies were limited to 90° flex, and neutral internal rotation and adduction. In the Tetreault study the no hip precautions (NHP) group were allowed to use devices that enhanced comfort such as raised toilet seats.	**1215**, 605 with NHP & 610 following HP. There were no statistical differences in demographic baseline characteristics between the 2 groups. All used the posterior approach, and all performed repair of the posterior joint capsule and short external rotator muscles. There was **no significant difference in hip dislocation rates** between the groups. HOOS JR scores were reported at 6 weeks, 3 months, and 12 months post op in 2 of the studies. The results showed better hip health in the NHP group. 2 studies reported time to discontinue	intended intervention was rated as 'some concerns' for all 3 studies. All 3 studies were conducted in the USA. The HP used and surgical approach are comparable to practice within the UK. The HOOS JR scores and discontinued use of aids in the NHP group demonstrates a speedier recovery without increased risk of dislocation. There is a lack of RCT to perform the meta-analysis. Patient compliance to NHP and HP use was not evaluated. All operations were performed by or under the supervision of senior surgeons potentially influencing the rate of post op dislocation compared to general practice.

			walking aids – patients using a walking frame or stick stopped using them statistically sooner in the NHP group than the HP group.	
Korfitsen *et al.*, (2023) Systematic review and meta-analysis of RCT and Non RCTs. *Included studies: RCTs: Peters (2019), Dietz (2019), Tetreault (2020), Mounts (2022)* *NRCTs: Brown (2020), Mikkleslsen (2014), Lightfoot (2020), Allen (2018),*	The study included 8,835 participants from RCTs and non-randomized studies (NRSs). Included adults with primary hip OA For studies to be included 90% of participants had to have a femoral head replacement of 32mm or larger using a posterior surgical approach	Literature searches were conducted on Embase, MED-LINE, Cochrane CENTRAL, CINAHL, and Pedro databases from 2016 to July 2022. One reviewer also searched the web of science. Interventions compared post operative HP (Hip flexion beyond 90 degrees, adduction, and internal rotation) with minimal or no precautions for 6-8 weeks. Critical outcomes were No. Of dislocations within 3/12 post-surgery, re-operation, return to work, return to function	4 RCTs and 5 NRCTs including **8,835** patients were included. After a THR using a posterior approach, HP had minimal or no significant impact on recovery outcome. No to minimal difference between dislocation rates for either group after surgery. No meaningful difference in patient reported outcome measures. Performance	**Evidence does not support the routine use of HP to prevent dislocation.** Uses the GRADE framework for methodological rigor – but this does rely on subjective judgement therefore may be subject to reviewer bias. However, used two reviewers & Cochrane's risk of bias tool to reduce this and a third reviewer used to settle disputes. Size effect was calculated. Uses random-effects meta-analysis to synthesise data

Weegen (2019)	Case studies were excluded The studies were conducted in hospitals and single centre trials – clinical environments	within 6-12/12 using HOOS questionnaire. Performance based function review preferably 30 seconds chair test, 40 metres fast paced walk test, timed up and go test, 6-minute walk test of stair climb. Evidence was reviewed using the GRADE approach.	based assessments slightly favoured the groups without HP, but evidence was uncertain. Time to return to work minimal between the two groups. No significant difference between re-operation rates.	which is appropriate given the variability across the studies – though diversity in the studies could dilute the strength of the findings. Not all included studies monitored compliance with HP. None of the included studies reported how patients dislocated – but was concluded as most 86% of dislocations were unavoidable adding weight to not using HP. However, caution should be had with the results as 1 RCT and 2NRCTs included minimal precautions in the control group.

Crompton *et al.*, (2020) Systematic review *Included studies: Mikkelsen et al. 2014 (RCT)* *Allen et al. 2018 (Retrospective Cohort study)* *van der Weegen et al. 2019 (Cohort study)* *Peters at al. 2019 (Prospective randomized, non-inferiority study)* *Kornuijt et al. 2016 (Prospective comparative safety study)* *Gromov et al. 2015 (Retrospective, non-*	6,900 patients undergoing THR.	3,517 patients allocated to restricted (standard precautions), and 3,383 unrestricted (reduced precautions). 202 papers were identified and reduced to 112 when the date range was set to Jan -2019 Oct. After removal of duplicates 66 papers were assessed. 30 were excluded based on title and abstract. A further 29 excluded on full text, leaving 7 papers. 5 papers were prospective and 2 were retrospective, with 2 RCTs and 5 cohort studies. Follow up duration from 3 weeks to 1 year, with two following up on more than 1 occasion. Included 1 multicentre trial United states, 3 studies from the Netherlands, 2 based in Denmark and 1 UK.	Of 6,900 pts 146 dislocations recorded over the 7 studies (2.2%) in the restricted group and 68 (2%) in the unrestricted group. **Overall, removal of hip precautions or reduction of precautions following posterior approach did not increase dislocation rates**. A more restricted protocol increased HOOS scores, and a statistically non-significant trend for reduced protocols improving ADL scores.	Of the 7 studies only 2 were RCTs and 5 single centre trials. Heterogenous group of prosthetics were used in the studies, which could have impacted dislocation rates. However, this could be argued as reflects current NHS practice. Variation in hip precautions, most using standard, but even in the group classed as no restrictions some had reduced restrictions which may not give a true reflection of no restrictions. The review only includes posterior approach therefore cannot be generalised to all approaches. Limitations variety of study types, lack of secondary outcome data across the studies pain scores, time to return to ADLs, time back to work.

inferiority study)				Large sample size, but large proportion came from 2 of the 7 studies, one of which used similar restrictions for both groups only changing sleeping position.
Van Der Weegan *et al.,* (2016) Systematic literature review and meta-analysis Included RCT studies: Barrett et al., (2013), Peak et al., (2005) Ververeli et al., (2009) Included NRCT studies: Duwelius et al., (2007) (Retrospective matched cohort study, Khan	A total of 1,122 procedures across 6 studies were included 3 RCTs & 3 NRCTs	MEDLINE and the Cochrane Library were searched in Feb 2015. Conducted using PRISMA statement. HP group: n = 528; no HP group: n = 594. Inclusion criteria: Primary THA, two or more post operative restrictions/precautions, studies reporting on dislocation rates. Secondary outcomes included function, return to ADLS, QOL and patient satisfaction. Variation of outcomes used: Harris Hip score, Hip disability and OA outcome score	Pooled data showed no significant difference in dislocation rates between the groups, with eight dislocations (1.5%) in the restricted group compared to six (1.0%) in the unrestricted group. Patient-reported outcome measures were more favourable in the unrestricted group, the differences between	**Post-operative HP following primary total hip arthroplasty (THA) have minimal influence on recovery outcomes.** Implementation of less restrictive or unrestricted protocols did not result in higher dislocation rates and may be associated with a reduced incidence. More liberal protocols facilitate earlier and improved engagement in activities of daily living (ADLs), expedite return to work, decreased hospital length of stay, and enhanced patient satisfaction.

et al., (2006) (Retrospective cohort study) & Mikkelsen et al., (2014) (Prospective cohort study).		the Western Ontario and McMaster Universities Osteoarthritis Index measures, VAS and 6-minute walk test. Exclusion: studies without a control group, case reports were excluded, if dislocation rates were not reported, not involving primary THA & articles in languages other than English, Dutch or German.	groups were not considered clinically significant, with only Khan et al. (2006) reporting a significant difference. There was no significant difference in reoperation rates between the groups; however, the available evidence was limited. Time to resume activities (i.e. driving, walking without an aid, was significantly better for the unrestricted group in four studies, and length of stay was significantly shorter for the unrestricted group in two studies.	Adheres to the PRISMA guidelines, ensuring transparency in its review and analysis. Inclusion of RCT and NRCTs gives a comprehensive view of the evidence. Use of the GRADE framework gives credibility to the findings Clinically relevant focusing on dislocation rates, patient reported outcome measures and recovery metrics. Inclusion of minimal HP in control group reduces the strength of the findings for this group Variability in surgical techniques and prosthesis components adds complexity to the results – although this may reflect general practice

			Peake *et al.,* (2005) recovery satisfaction significantly higher in the unrestricted group.	with surgeon preferences. Not all studies included standardised performance tests such as the timed up and go.

Table 1 listed papers in date order.

Summary

In summary the above table of evidence suggests eliminating or reducing the need for HP post THR does not significantly increase the risk of dislocation in line with GIRFT recommendations (Machin 2022).

The research suggests the benefit to reducing HP is a quicker return to ADLs, improved patient satisfaction, with a potential to provide more efficient and cost-effective patient care.

However, caution should be taken as the evidence to support such claims is of moderate quality. A major flaw of the research is that in some studies those that were the NHP group still had some level of precaution included and vice versa – poor monitoring of compliance with HP could have skewed data.

Studies with the use of minimal HP still required patients to limit hip flexion. Reducing the HP to this still has the same impact on cost. Equipment provision is no different for allowing rotation and adduction but limiting flexion, to the use of full HP. There may be a temptation for surgeons to be cautious in their approach to reducing HP however – the cost benefit of this is not warranted. The evidence suggests a bold approach is the most cost effective with no significant increase in risk of dislocation.

Our critical appraisal of HP can therefore support the streamlining of care pathways, reduce unwarranted variation in care across the UK, enable better allocation of clinical time, equipment and funding. Ultimately this will contribute to sustainability in the NHS and help build greater resilience of our healthcare services.

Implications for practice

At a large NHS acute provider organisation in the North Midlands the cost of providing equipment for HP can be approx. £865 per patient (April 2025). Family members may be asked to take equipment home to minimise additional delivery costs. Timeliness of this may delay discharge extending hospital stay at a cost of £400 per day.

Eliminating the need for equipment for HP would reduce this cost burden. Additionally, staff time currently spent assessing and providing equipment could be re-directed to rehabilitation, helping patients to recover quicker. This could contribute to improved patient outcomes such as LOS and QoL – supporting the principle that home care is best care when it comes to patient recovery.

Future research should evaluate the long-term impact of removing HP with an emphasis on the psychological effect, such as fear and anxiety and how these influence return to societal roles and overall patient QoL.

What would you post on X (previously Twitter)?

No evidence to continue the use of hip precautions post THR - costly equipment provision - is it worth it? #Freedomtomovefreely #putyourownsockson #reducewastefulequipmentprovision

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Please tick the box that best reflects your clinical bottom line and include the picture on page 1

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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