

# INPLASY

## Robotic-Assisted vs. Conventional Total Knee Arthroplasty: A Systematic Review and Meta-Analysis of Alignment Accuracy and Clinical Outcomes

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### ADMINISTRATIVE INFORMATION

**Support** - None.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202490120

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 26 September 2024 and was last updated on 26 September 2024.

## INTRODUCTION

**Review question / Objective** A Systematic Review and Meta-Analysis of Alignment Accuracy and Clinical Outcomes of Robotic versus Conventional Total Knee Replacements in Adult Patients undergoing the two procedures.

**Rationale** Robotic Total Knee Replacement, also known as Robot-assisted TKR, is an emerging procedure in knee arthroplasty field with aims of improving alignment accuracy and post-operative functional and clinical outcomes of patients, compared to conventional technique. The review looks at high level evidence to determine superiority of either procedure.

**Condition being studied** Total Knee Arthroplasty in patients with osteoarthritis.

## METHODS

**Search strategy** A comprehensive literature search was conducted using five electronic databases: PubMed, EMBASE, Web of Science, SCOPUS, and Cochrane Library from their inception till August 2024. The search was aimed at identifying studies comparing robotic and conventional TKA.

**Participant or population** PICO: All adult patients (>18) undergoing a robotic or conventional TKA.

**Intervention** Robotic TKA.

**Comparator** Conventional TKA.

**Study designs to be included** Randomised Controlled Trials (RCT).

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**Eligibility criteria** RCTs that compared robotic versus conventional TKA and reported on clinical and functional outcomes.

**Information sources** PubMed, EMBASE, Web of Science, SCOPUS, and Cochrane Library.

**Main outcome(s)** Operative time, intra-operative blood loss, and functional outcomes including Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) and Oxford Knee Score (OKS) scores.

**Quality assessment / Risk of bias analysis** Risk of Bias assessment using the Risk of Bias (RoB) Cochrane tool.

**Strategy of data synthesis** Pooled analyses were carried out using Review Manager (RevMan 5.4) software  
MD for continuous outcomes  
RR for dichotomous outcomes  
Fixed effect analysis performed.

**Subgroup analysis** Not applicable.

**Sensitivity analysis** Cochrane Q Test.

**Country(ies) involved** United Kingdom.

**Keywords** meta-analysis; robot-assisted; conventional; arthroplasty.

**Dissemination plans** Publication in journal.

#### **Contributions of each author**

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