## Introduction

Total knee arthroplasty (TKA) is commonly performed to alleviate knee pain and improve function in individuals with osteoarthritis (OA), rheumatoid arthritis (RA), osteonecrosis, and other disease processes affecting the knee. In the United States, more than 687,000 total knee arthroplasty surgeries occur each year.

## Background

Physical therapy treatment programs have differed in frequency, functional activities, exercises, and treatment progression. Protocols have been found to range from only walking the patient to complete instruction in functional activities and specific exercise protocols with less than consistent practice patterns reported among physical therapists treating patients with total knee replacements. As of today, some controversy exists in the literature regarding the most effective physical therapy protocol for patients with TKA.

## Purpose

The purpose of this review article is to combine relevant research regarding the most appropriate physical therapy intervention and to provide recommendations for treatment of patients with a total knee arthroplasty.

## Methods

The literatures used in this study were found by searching databases like; EBSCO, Hooked on Evidence, and Google Scholar. All articles were investigating interventions after TKA due to osteoarthritis and had to be, written in English, peer-reviewed, and had a 1990 to present date restriction. Key phrases like, “physical therapy with total knee replacements” were used to search for the articles. All studies found were evaluated using Sackett’s five hierarchical levels of evidence and three grades of recommendations. Also, the scientific rigor for each study was evaluated using criteria developed by Megens and Harris.

## Results

Twenty-three studies were critically evaluated and classified according to Sackett’s Levels of Evidence. Fifteen studies were categorized as level I, five studies as level II, and three studies as level V. Therefore, according to these levels, Grade A recommendations were made involving level I studies, Grade B recommendations were made involving level II studies, and Grade C recommendations were made involving level V studies. Megen’s and Harris’s suggestions for scientific merit were also taken into consideration while formulating recommendations for clinical practice for patient anticipating or recovering from total knee replacements. Three of the twenty-four studies reviewed fulfilled all of the criteria for scientific rigor indicating a strong confidence that treatments would affect outcome measures.

## Discussion

Research on continuous passive motion (CPM) shows some conflicting evidence. The evidence was also mixed on the topic of multidisciplinary treatment approach following TKA. Further research is needed in this area, with larger sample sizes and a more clear operational definition of multidisciplinary treatment. Also, there was some controversy regarding neuromuscular electrical stimulation (NMES). One level I study meeting 6 of the six criteria for scientific rigor supports the use of progressive resistive exercise with or without the use of NMES.

## Conclusions

The research supports a frequency of 1 treatment session per day lasting at least 20 minutes in the inpatient setting starting less than twenty-four hours after surgery. This therapy should promote patient controlled passive range of motion exercises and functional training. CPM is not beneficial in the inpatient setting. In the outpatient setting, research supports high-intensity training, progressive resistive exercise, progressive aquatic therapy, whole-body vibration strength training, eccentric hamstring training, and simple home exercises.