

Effectiveness of continuous passive motion (CPM) in the early post total knee arthroplasty period, as an adjunct to physiotherapy

Submission date 17/03/2014	Recruitment status No longer recruiting	☐ Prospectively registered ☐ Protocol
Registration date 12/06/2014	Overall study status Completed	☐ Statistical analysis plan ☐ Results
Last Edited 12/06/2014	Condition category Musculoskeletal Diseases	☐ Individual participant data ☐ Record updated in last year

Plain English summary of protocol

Background and study aims

Continuous passive motion (CPM) is used as a part of the rehabilitation of patients who have undergone total knee arthroplasty (TKA). CPM has been widely used as an add on to physiotherapy after TKA for the past two decades. However, there is still controversy as to whether it is useful. The range of motion (ROM) has been reported to improve as a result of CPM. On the other hand, other studies have found no statistically significant change in ROM. Among the proposed benefits of CPM is the reduction of pain after the operation. There is a lot of debate about the duration of individual sessions of CPM. The aim of this study is to find out whether and how CPM is helpful after total knee arthroplasty. It will also examine whether the application time (30 min vs 60 min) of the CPM device affects pain and the knee joints active ROM soon after the operation.

Who can participate?

Men and women (age 50-80 years) who will undergo total knee arthroplasty in the 1st Orthopaedic Department of the KAT General Hospital of Athens.

What does the study involve?

Participants will be randomly divided into three groups. The control group will be treated with physiotherapy. The CPM-30 group will be treated with physiotherapy combined with the application of a CPM device for 30 minutes twice a day. The CPM-60 group will be treated with physiotherapy along with the application of a CPM device twice a day, but for 60 minutes. The use of CPM will start on the second day after the operation.

What are the possible benefits and risks of participating?

Participants will receive physiotherapy regardless of the procedure to be performed. All patients will receive a better or a faster rehabilitation program. Information obtained from this study may benefit patients undergoing total knee arthroplasty in the future. Participation in this study will not increase the rate of possible postoperative complications.

Where is the study run from?

1. Physiotherapy Department of the Technological Educational Institute of Athens (TEI of Athens), Greece
2. First Orthopaedic Department of the KAT General Hospital of Attica, Greece.

When is the study starting and how long is it expected to run for?

The study started in November 2012 and will run until the required number of patients has been evaluated.

Who is funding the study?

Investigator initiated and funded.

Who is the main contact?

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Contact information

Type(s)

Scientific

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Additional identifiers

Protocol serial number

271/05-11-2012

Study information

Scientific Title

Continuous passive motion (CPM) in the early postoperative period following total knee arthroplasty: effect on pain and active motion

Study objectives

The use of CPM combined with physiotherapy in early postoperative rehabilitation after total knee arthroplasty (TKA) will produce more beneficial results than physiotherapy alone, with the degree of added benefit being related to the duration of CPM application.

Ethics approval required

Old ethics approval format

Ethics approval(s)

1. Research Ethics Committee of the Technological Educational Institute of Athens, ref: 1/15-02-2013; 15/02/2013
2. Scientific Research Council of the 'KAT' General Hospital of Athens, ref: 271/05-11-2012

Primary study design

Interventional

Study design

Randomized parallel group clinical trial

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Total knee arthroplasty rehabilitation protocols

Interventions

Participants will be divided into three groups.

1. The control group will follow only the conventional physiotherapeutic protocol
2. The CPM-30 group will follow the same physiotherapeutic protocol combined with two 30-min daily sessions of CPM
3. The CPM-60 group will follow the physiotherapeutic protocol in conjunction with two 60-min daily sessions of CPM

Intervention Type

Other

Phase

Not Applicable

Primary outcome(s)

Difference in postoperative pain and knee range of motion (ROM) according to the CPM application duration. Pain was evaluated by the patient, with the Greek version of the VAS/FPS-R pain scale (self-reported measure) and the range of motion was measured with two identical, long-arm goniometers by two researchers and the average of the two values was recorded (objective measure).

Key secondary outcome(s)

1. At 7th postoperative day, the acquired active ROM (knee flexion and extension)
2. Evaluation of postoperative pain (2nd and 7th postoperative days)

Baseline data and demographic characteristics were measured the day before surgery. Pain was measured twice (the 2nd and 7th postoperative day). The active range of the flexion motion and the extension motion were measured on the 7th postoperative day.

Completion date

17/03/2014

Eligibility

Key inclusion criteria

1. Age 50-80 years
2. All participants must be ambulatory and must not have undergone any osteotomy or arthroscopy in the joint of interest during the last 12 months
3. Willing to be assigned to any of the three study intervention groups

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Senior

Sex

All

Key exclusion criteria

1. Patients who have rheumatoid arthritis, musculoskeletal diseases, diabetes, or peripheral vascular disease
2. Patients undergoing treatment with corticosteroids
3. After enrollment, patients will be excluded if they present:
 - 3.1. Postoperative complications, such as problems in incision healing
 - 3.2. Pulmonary embolism

Date of first enrolment

12/11/2012

Date of final enrolment

17/03/2014

Locations

Countries of recruitment

Greece

Study participating centre

30 Ouranias Street

Athens

Greece

GR 14121

Sponsor information

Organisation

KAT" General Hospital of Athens (Greece)

ROR

<https://ror.org/04prmqc97>

Funder(s)**Funder type**

Other

Funder Name

Investigator initiated and funded (Greece)

Results and Publications**Individual participant data (IPD) sharing plan****IPD sharing plan summary**

Not provided at time of registration