

CONTINUOUS PASSIVE MOTION FOLLOWING TOTAL KNEE ARTHROPLASTY

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ABSTRACT

Background

Knee arthroplasty (KA) is a common intervention that can enhance the quality of life for patients with osteoarthritis (OA) and rheumatoid arthritis (RA). Post-surgery rehabilitation protocols often include continuous passive motion (CPM). However, CPM protocols vary considerably amongst institutions.

Objectives

The purpose of the current meta-analysis is to evaluate the effectiveness of continuous passive motion following total knee arthroplasty.

Search Strategy

An electronic search of MEDLINE (1966 to 2002), EMBASE (1988 to 2002), CINAHL (1982 to 2002), HEALTH STAR (1991 to 1994) and CURRENT CONTENTS (1997 to 2002) was conducted to identify randomized controlled trials.

Selection Criteria

Following an a priori protocol, only randomized controlled trials of CPM for the treatment of participants post KA were eligible. Subjects were 18 years of age or older and had a pre-surgery diagnosis of degenerative joint disease. Both the experimental and control groups received physiotherapy. In addition to the physiotherapy intervention, the experimental group received CPM.

Data collection and analysis

Two reviewers independently selected trials for inclusion. Data were then extracted and the quality of the trial assessed using predetermined forms. Outcome measures of interest were: active and passive knee range of motion (ROM) length of hospital stay, pain, swelling and quadriceps strength. A fixed effects model was used throughout for continuous variables, except where heterogeneity existed; in which case, a random effects model was used. Results were analyzed as weighted mean differences (WMD) with 95% confidence intervals (CI). Standardized mean differences (SMD) were used when different scales were used to measure the same concept (e.g. pain). Dichotomous outcomes were presented as a relative risk.

Main Results

Fourteen trials were retained for analysis. Results favouring CPM were found for the main comparison of CPM combined with physiotherapy (PT) versus PT alone at end of treatment. For the primary outcomes of interest, CPM combined with PT was found to statistically significantly increase active knee flexion (WMD 4.30 degrees, 95% CI: 1.96, 6.63) and decrease length of stay (WMD -0.69 days, 95% CI: -1.35, -0.03). CPM was also found to decrease the need for post-operative manipulation (RR 0.12, 95% CI: 0.03, 0.53). CPM did not significantly improve passive knee flexion and passive or active knee extension.

Reviewers' conclusions

CPM combined with PT, may offer beneficial results compared to PT alone in the short term rehabilitation following total knee arthroplasty.

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