

*Does the type of exercise or addition of continuous passive motion influence knee range of motion and functional outcomes following total knee arthroplasty?*

To answer this question, we performed a comprehensive search of the PubMed database (December 2008) for randomized, controlled trials and systematic reviews that addressed this specific research question.

Four studies met the criteria for inclusion in this review, with two determining the effectiveness of continuous passive motion (CPM) and/or slider board therapy in addition to standard exercise therapy (1,4), and two comparing functional based exercise programs with standard exercises (2,3).

The outcomes evaluated for this review included measures of knee function and range of motion (ROM). Knee function was assessed in all of the studies using questionnaire-based measures such as the WOMAC Osteoarthritis Index (1,2,4) and functional tests such as the "up and go" or timed walking distance (1,2,3). The addition of continuous passive motion or slider board therapy to standard exercise during inpatient rehabilitation after TKA

did not provide any additional functional benefit (1,4). The duration of CPM in these studies ranged from 35 min or 2 hrs of CPM once per day (1) to 2 hrs of CPM three times per day (4).

In contrast, functional exercise had a significant impact on function in one of the two studies (2). Walking distance and WOMAC index were significantly improved after 2 mos of an "intensive" functional exercise program (2). Although knee function did not improve with a 12 mos functional exercise program (3), it is important to note that this program lacked progression of exercise intensity and variety, perhaps contributing to the high drop out rate (almost 50%).

Active knee ROM was assessed in three of the studies (1,3,4). There was no additional improvement in ROM with the addition of CPM to exercise therapy (1,4), and no difference between functional and standard exercise (3). As noted above, study limitations likely impacted this result.

Based on this review, there is no additional benefit of CPM following TKA on either knee function or ROM. However, it is likely that functional home exercise programs of adequate intensity will provide improvements in both of these parameters beyond that of conventional exercises.

*Check with the provider of this newsletter to learn more about exercises appropriate for this condition.*

1. Denis M, Moffet H, Caron F, Ouellet D, Paquet J, Nolet L. Effectiveness of continuous passive motion and conventional physical therapy after total knee arthroplasty: a randomized clinical trial. *Phys Ther.* 2006 Feb;86(2):174-85.
2. Moffet H, Collet JP, Shapiro SH, Paradis G, Marquis F, Roy L. Effectiveness of intensive rehabilitation on functional ability and quality of life after first total knee arthroplasty: a single-blind randomized controlled trial. *Arch Phys Med Rehabil.* 2004 Apr;85(4):546-56.
3. Frost H, Lamb SE, Robertson S. A randomized controlled trial of exercise to improve mobility and function after elective knee arthroplasty. Feasibility, results and methodological difficulties. *Clin Rehabil.* 2002 Mar;16(2):200-9.
4. Beaupre LA, Davies DM, Jones CA, Cinats JG. Exercise combined with continuous passive motion or slider board therapy compared with exercise only: a randomized controlled trial of patients following total knee arthroplasty. *Phys Ther.* 2001 Apr;81(4):1029-37.