Factors influencing early rehabilitation after THA: a systematic review

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CRD summary
This review found that a range of interventions improved postoperative rehabilitation and recovery for patients who underwent total hip arthroplasty. However, the review was vulnerable to multiple sources of error and biases, and the authors' conclusions should not be regarded as reliable.

Authors' objectives
To assess the effectiveness of a range of approaches in achieving faster rehabilitation and improved short-term outcomes for patients after total hip arthroplasty (THA).

Searching
CINAHL, MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL) and MEDLINE via PubMed were searched for English-language studies from inception to 2008; search terms were reported. Reference lists of retrieved articles were searched.

Study selection
Controlled trials published between 1950 and 2008 classified as Level I or II studies and that investigated use of strategies that affected rehabilitation after total hip arthroplasty in adults (minimum 18 years) were eligible for inclusion. Animal studies, studies classified as Level III, IV or V, non-indexed studies and unpublished data were excluded.

Interventions evaluated in the review were: minimally invasive surgical techniques; multimodal approaches to pain control; postoperative hip restrictions; and preoperative physiotherapy. Outcomes examined included: use of walking aids; return to normal activities; pain control; visual analogue pain scores; components of gait analysis; Western Ontario McMaster Osteoarthritis (WOMAC) scores; hip function scores; and range of movement outcomes.

Two reviewers independently applied inclusion and exclusion criteria to retrieved titles and abstracts from the search. Three reviewers independently screened full-text articles to determine eligibility for inclusion. Disagreements were resolved through discussion.

Assessment of study quality
Methodological quality of included trials was assessed by analysis of evidence level, randomisation, allocation concealment, methods of blinding, outcome measurements and follow-up of patients.

The authors stated neither how the quality assessment was performed nor how many reviewers performed the quality assessment.

Data extraction
Data were extracted as reported in each study and presented in tables in the report. The end-point for the assessment was defined by the authors as return to independent ambulation with the ability to undertake activities of daily living.

The authors stated neither how data were extracted for the review nor how many reviewers performed data extraction.

Methods of synthesis
Results from the trials were presented as a narrative summary with supporting information from tables. The results were grouped according to intervention type in both the tables and text.

Results of the review
Sixteen trials (n=2,060) were included: 12 studies classified as Level I and four studies classified as Level II. Duration of follow-up ranged from six weeks to six months (length of follow-up was not reported for all the included studies).

**Surgical exposure/minimally invasive surgical approaches (n=691):** Five studies compared outcomes after mini incisions versus conventional approaches. Beneficial outcomes reported included earlier returns to normal activity, earlier discontinuation of use of walking aids, earlier improvements in gait velocity and improved pain control with minimally invasive surgical approaches in four studies. One study found no differences in hip function scores, WOMAC osteoarthritis scores and health and well being as measured by the SF-36 (Medical Outcomes Study 36-Item Short-Form Health Survey).

**Hip restrictions (n=764):** Two studies examined hip dislocation rate after anterolateral total hip arthroplasty and compared groups with and without postoperative hip restrictions. One study reported a lower dislocation rate without use of restrictions. The other study reported a faster return to normal activities and higher levels of satisfaction for the group where patients had no hip movement restrictions after more than six weeks post surgery.

**Multi-modal pain control (n=358):** Five studies compared various post-surgical pain control methods. Patients treated with local infiltration analgesia, lumbar plexus block, continuous femoral nerve block and periarcticular injections, and continuous psoas compartment block had lower visual analogue scale pain scores and less nausea and vomiting than those treated with epidural infusions and intravenous patient-controlled anaesthesia (four studies).

**Preoperative physiotherapy (n=247):** Four studies assessed post-surgical functional outcomes (such as gait, muscle strength and frequency of home discharge) after preoperative physiotherapy treatment. In two studies, improvements in walking distance, gait velocity muscle strength and range of motion were observed for patients in intervention groups. One study found no difference between groups in hip scores, pain scores and range of movement over two years of follow-up. A fourth study found that frequency of home discharges was higher for the intervention group, but observed no differences in WOMAC scores.

**Authors’ conclusions**
Evidence suggested that a range of interventions (including preoperative physiotherapy, aggressive postoperative pain control and use of minimally invasive surgical procedures) improved postoperative rehabilitation and functional recovery in patients who had total hip arthroplasty. In patients for whom surgery was performed using anterolateral approaches, removal of postoperative hip restrictions may be justified on the basis of the evidence presented.

**CRD commentary**
The review addressed a question that was broad in scope. Some inclusion criteria that related to study design, patients and interventions were specified. The search was adequate, although studies not in English and unpublished studies were excluded. Relevant studies may have been missed and language and publication biases could not be ruled out. Primary outcomes were not defined in the review. The authors’ decision to summarise the studies in a narrative review was justified given the reported heterogeneity of interventions, methodology and outcome measures. The authors reported that they assessed the quality of individual studies, but did not report the findings of this assessment, which made it difficult for the reader to judge study validity. The authors presented insufficient information on the interventions in each study. Only a few selected statistical tests of effect were presented on the results. Overall, this review may have been vulnerable to multiple important sources of bias and error. Therefore, the conclusions should not be regarded as reliable.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that larger studies with consistency across outcome measures were required to determine whether preoperative physiotherapy should be part of rehabilitation protocols. Multicentre prospective studies were required to compare outcomes from use of various surgical techniques and respective pain-control protocols.

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