

A Systematic Review Of Preoperative Rehabilitation For Patients Undergoing Total Hip Or Knee Arthroplasty

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ABSTRACT

Background: Preoperative rehabilitation is proposed to improve outcomes following total hip and knee arthroplasty (THA/TKA), however, its effectiveness remains unclear.

Objectives: To test the hypothesis that preoperative rehabilitation results in better postoperative outcomes for those undergoing THA and TKA.

Search Strategy: A professional librarian-assisted literature search of 10 online bibliographic databases (earliest to December 2008) and manual review of the bibliographies of systematic reviews retrieved, was undertaken.

Selection Criteria: Included: (1) Written in or translated into English, (2) a RCT, or systematic review, (3) subjects involved in a preoperative exercise and/or education intervention (4) who underwent THA and/or TKA and (5) a postoperative outcome was measured.

Data Collection and analysis: Two teams of two reviewers independently determined eligibility, extracted data and appraised the quality of the included studies. We used a random effects model to pool data and our *a priori* hypothesis to address heterogeneity.

Main results: 24 studies met our inclusion criteria and 11 had data similar enough to combine in a meta-analysis. Three studies demonstrated that preoperative education was effective in reducing postoperative anxiety (SMD -0.33; 95% confidence interval -0.57 to -0.08)($p=0.008$). Exercise interventions for THA subjects resulted in improvement in Harris Hip Scores at 3 months (WMD 6.05; 95%CI 1.29 to 10.81)($p=0.01$). There were no significant differences for the SF-36 ($p=0.15$) or WOMAC ($p=0.14$) when exercise was the intervention for TKA.

Author's conclusions: Education can reduce postoperative anxiety and exercise is effective in improving postoperative outcomes in THA subjects. The studies evaluating preoperative interventions for TKA subjects were limited in number and showed considerable variability in interventions, which make it impossible to make definitive conclusions about its effectiveness. Future research should begin with a small efficacy RCT to examine the effects of exercise alone on subjects undergoing TKA and THA that, if positive, would provide evidence for conducting a larger effectiveness RCTs.

INTRODUCTION

With an aging Canadian population, the incidence of osteoarthritis (OA) is expected to increase to 100,000 cases/year over the next 30 years.



OA is associated with joint pain, decreased strength and mobility, which may result in potentially severe disability, decreased function and reduced quality of life.

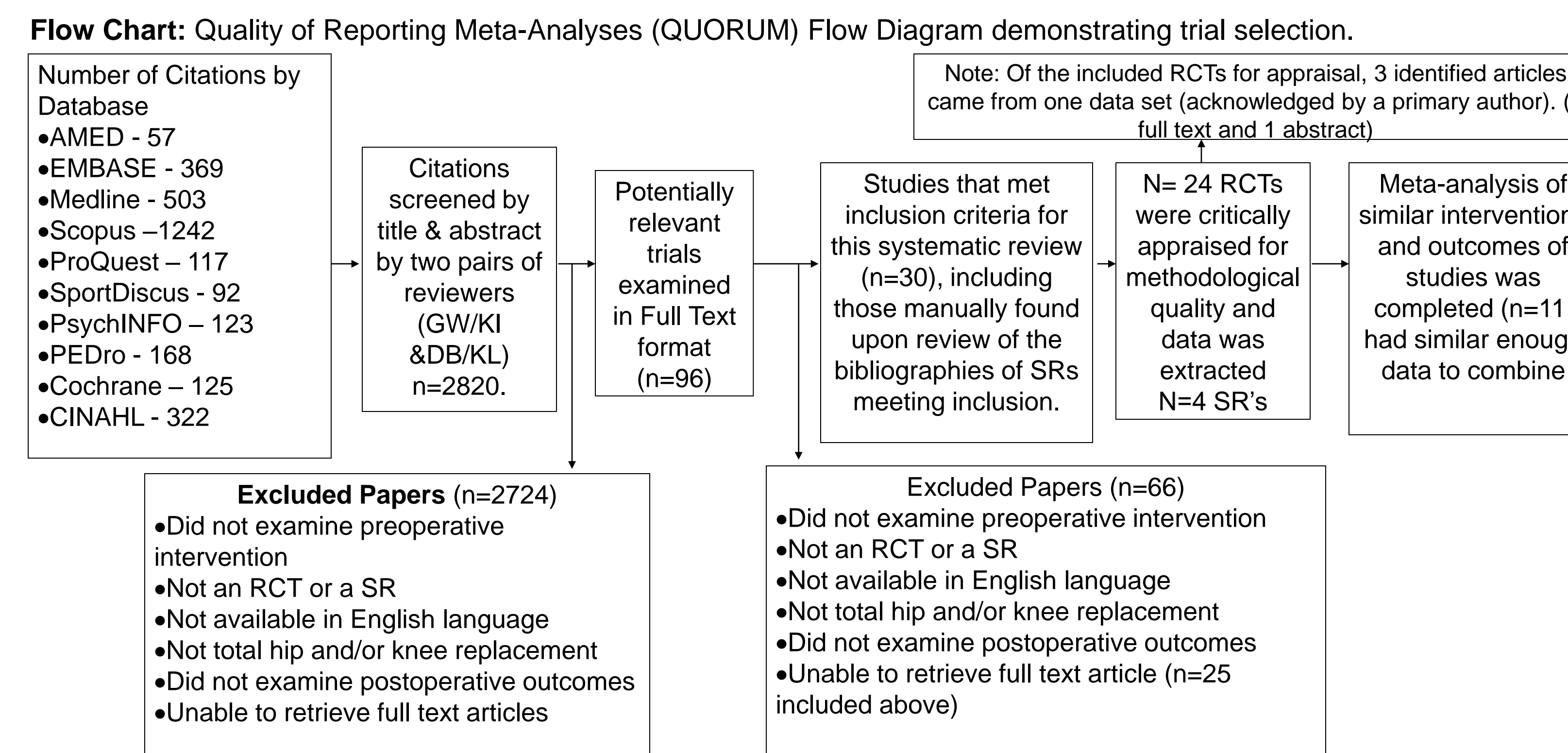


Preoperative rehabilitation is frequently proposed to enhance physical function, maintain independence, reduce stress, anxiety and pain, and to improve outcomes following total hip and knee arthroplasty (THA/TKA).

PURPOSE

To conduct a systematic review and meta-analysis to test the hypothesis that pre-operative rehabilitation results in improved post-operative outcomes for those undergoing THA and TKA.

METHODS



Agreement between reviewers was good to very good (Kappa = 0.73 for KL/DB and 0.83 GW/KI).

RESULTS

Three studies, representing 265 subjects, indicated that preoperative education was effective in reducing early postoperative anxiety (SMD -0.33; 95%CI -0.57 to -0.08)($p=0.008$). See Figure 1

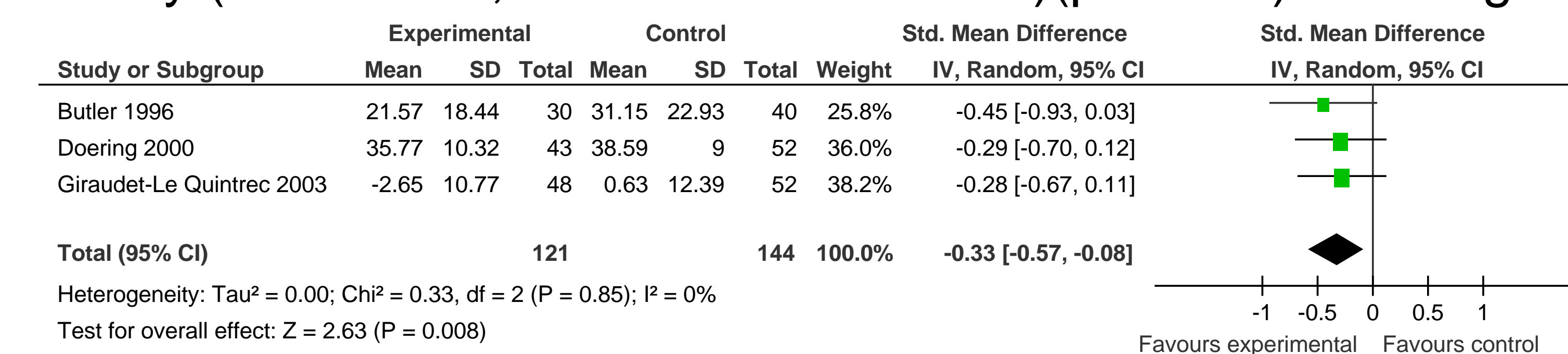


Figure 1 : THA exercise and education, outcome: early postoperative anxiety

Two studies indicate an improved Harris Hip Score at 3 months for THA subjects receiving exercise intervention (WMD 6.05; 95%CI 1.29 to 10.81)($p=0.01$). See Figure 2

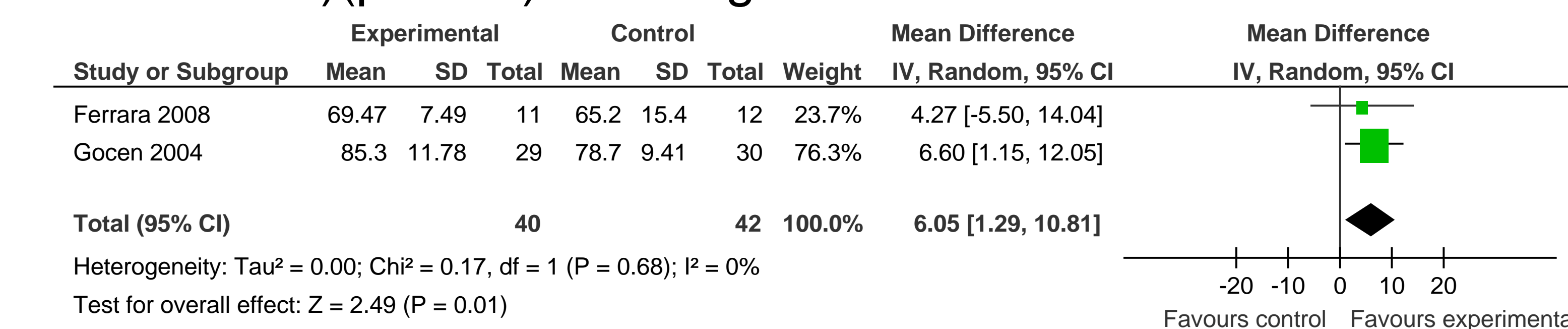


Figure 2 : THA exercise outcome: Harris Hip Score , 3 months

There was a component of exercise in all TKA studies.
 There was no significant difference in SF-36 ($p=0.15$) or WOMAC ($p=0.14$) when exercise was the intervention for TKA.

DISCUSSION

The majority of included RCTs either did not use or did not state the use of concealment allocation or blinding of assessors and typically "true controls" were not used, therefore compromising their validity.

Although this review demonstrated a reduction of anxiety in subjects undergoing THA, this result might not be generalizable to every surgical group. Lilja et al. indicated an increase in anxiety in breast cancer subjects receiving preoperative education ($p<0.01$).

Most of the exercise interventions were of short duration, not specific to the lower limb and varied in content. We suspect these interventions can be improved upon, however as surgical wait times diminish, longer exercise interventions may not be possible.

CONCLUSIONS

Preoperative education can reduce postoperative anxiety and preoperative exercise is effective in improving postoperative outcomes in THA subjects. Incorporating these interventions is therefore recommended.

TKA studies are limited in number and show considerable variability in interventions making it impossible to make definitive conclusions for this group.

Future studies should first focus on small efficacy RCTs that, if positive, should then be expanded into larger effectiveness RCTs.

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