

“Encouragement from the co-medical staff via the website helped me continue,” etc.

Conclusion: It has become apparent that the website we have developed played a role in triggering patients' motivation to continue their rehabilitation exercise. Enhancement of self-efficacy is said to be essential in continuing exercise routines. In this case, the patients' self-efficacy was enhanced due to the supporting and encouraging words. Meanwhile, modification of the uploading feature is thought to be necessary. The feature was added so that the medical staff can check if patients are exercising in a correct manner, but some patients found it difficult to manipulate it. The system is still facing the challenge of making the feature's usage more satisfactory through simplification of its manipulation.

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### EFFECTIVENESS AND COST-EFFECTIVENESS OF A GROUP-BASED OUTPATIENT PHYSIOTHERAPY INTERVENTION FOLLOWING KNEE REPLACEMENT FOR OSTEOARTHRITIS: FEASIBILITY STUDY FOR A RANDOMISED CONTROLLED TRIAL

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**Purpose:** Total knee replacement (TKR) is a common operation performed to provide pain relief and restore function. In 2012, 76,051 primary TKRs were performed in the UK National Health Service, with osteoarthritis (OA) as the primary indication for surgery in 97% of cases. Inpatient physiotherapy is routinely provided after TKR to enhance recovery prior to discharge. However, there is variation in the provision of outpatient physiotherapy across the UK. While research suggests that outpatient physiotherapy provides short-term benefit up to 3-months post-operative, the longer-term benefits are uncertain.

This study aimed to evaluate the feasibility of conducting a randomised controlled trial (RCT) to assess the longer-term effectiveness and cost-effectiveness of group-based outpatient physiotherapy following TKR for OA. Specific objectives were to assess trial design, ascertain recruitment and retention rates, identify barriers to participation, refine data collection methods, and evaluate uptake and patient satisfaction with the intervention.

**Methods:** Patients listed for primary TKR because of OA at a UK orthopaedic centre were approached about the study at their pre-operative assessment appointment. Patients who decided not to take part were asked about their reasons for non-participation. Patients were randomised to attend a newly developed post-operative physiotherapy class plus standard care or standard care only using a computer-generated randomisation system (Minim).

Patients allocated to the intervention group were invited to attend a weekly one-hour physiotherapy class, starting at 6 weeks after surgery and running over 6 consecutive weeks. The group classes were run by two physiotherapists within an outpatient gymnasium, and involved task-orientated and individualised exercises. Classes were held at a fixed time each week and ran on a rolling system, allowing new patients to join each week. Participants completed an evaluation questionnaire after the final class.

Outcomes assessment was by postal questionnaire prior to surgery and 2-weeks, 3-months and 6-months after surgery. Outcomes related to function, pain, balance, self-efficacy, participation and quality of life. Self-report resource use data were collected in the 3-month and 6-month post-operative questionnaires.

**Results:** 124 patients were approached about the study and 46 consented to participate (37% recruitment rate). Frequent reasons for non-participation were related to travelling distance, transportation, and time commitments.

23 patients were randomised to the intervention group. Of these patients, 6 patients did not attend any classes (3 had medical complications, 2 withdrew, 1 was on vacation). 17 patients attended the exercise class; 13 attended all 6 classes and 4 attended 5 classes. All attendees provided feedback about the class. All felt that one hour was the right amount of time. Most (15) patients were very satisfied with the range of exercises on offer. The task-orientated and individual exercises were given average usefulness ratings of 9.6/10 and 9.5/10, respectively. The rolling system of classes was acceptable to the physiotherapists as it allowed them to provide individualised advice to new patients while monitoring the progress of patients further on through the classes.

Retention of participants was acceptable; 2 patients were withdrawn from the intervention group (self-withdrawal) and 2 patients were withdrawn from the usual care group (post-operative knee amputation and surgery elsewhere). Questionnaire return rates were high in the intervention group (91% at 6-months post-operative) but lower in the usual care group (65% at 6-months post-operative).

**Conclusion:** Undertaking feasibility work for a RCT is labour-intensive; however this study highlights the importance of conducting such work. Collecting data on reasons for non-participation provided valuable information on barriers to participation in a trial with this population. The intervention was well attended, and feedback was positive. Delivering the intervention on a rolling basis was acceptable for staff, and potentially attractive from a hospital management viewpoint due to minimal administrative burden in offering weekly classes on set dates. Questionnaire completion was lower in the usual care group, highlighting the need for additional strategies to improve data collection e.g. telephone calls. Findings from this feasibility study will inform the design of the definitive trial to determine the effectiveness and cost-effectiveness of a group-based outpatient physiotherapy intervention following TKR for OA.

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### EFFECTS OF KNEE JOINT ASPIRATION AND CORTICOSTEROID INJECTION ON FLEXION REFLEX EXCITABILITY, PAIN AND PEAK MUSCLE TORQUE IN INDIVIDUALS WITH CHRONIC ARTHRITIS

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**Aim:** Marked weakness of the quadriceps muscles is typically observed in patients with arthritic joint disease. This is partly due to muscle atrophy and partly due to ongoing neural inhibition that prevents the quadriceps from being fully activated, a process known as arthrogenic muscle inhibition (AMI). The underlying neurophysiological mechanisms by which abnormal joint afferent output leads to AMI are only partially understood. One of the spinal reflex pathways thought to be involved is the Flexion Reflex. The Flexion Reflex is a polysynaptic pathway that typically produces a pattern of flexor facilitation and extensor inhibition. As such, it has been suggested that enhanced Flexion Reflex excitability may be partially responsible for quadriceps AMI. There is evidence from animal studies that experimental arthritis strongly increases flexion reflex excitability. However, it is unclear whether knee joint inflammation similarly affects flexion reflex excitability in humans. Thus the primary aim of this study was to examine the effects of knee joint aspiration and intraarticular corticosteroid injection on flexion reflex excitability, knee pain and knee extensor peak torque in individuals with chronic arthritis.

**Methods:** Sixteen patients with chronic arthritis (10 rheumatoid arthritis, 5 osteoarthritis, 1 psoriatic arthritis) and signs and symptoms of knee joint synovitis participated in this study. Flexion reflex threshold, knee pain and knee extensor peak torque were measured at baseline on two occasions, then immediately after knee joint aspiration alone, and 5 and 15 days after knee joint aspiration and the injection of 40 mg of methylprednisolone acetate. Statistical analysis involved repeated measures ANOVA.

**Results:** There were no changes in the dependant variables across the two baseline measurement points. Thereafter, the Flexion Reflex threshold increased by 20% after aspiration ( $p < 0.05$ ) and by 39% ( $p < 0.05$ ) and 50% ( $p < 0.05$ ) at day 5 and 15 respectively following the combination of aspiration and corticosteroid injection. Knee extensor peak torque increased by 8% ( $p < 0.05$ ) after aspiration and 15% ( $p < 0.05$ ) and 23% ( $p < 0.05$ ) at day 5 and 15 respectively. Knee pain was reduced by 60% ( $p < 0.05$ ) at day 5 and 34% ( $p < 0.05$ ) at day 15.

**Conclusions:** The change in flexion reflex excitability following aspiration alone is a novel finding, suggesting that intraarticular swelling may enhance flexion reflex excitability as well as increasing the excitability of other spinal reflex pathways such as group I non-reciprocal (Ib) inhibition. Changes in the threshold after aspiration and corticosteroid injection were indicative of their positive treatment effect in reducing inflammatory sources of joint afferent stimulation. Accompanying positive effects were observed in knee extensor torque and knee pain.