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TARGETING REHABILITATION TO IMPROVE OUTCOMES FOLLOWING TOTAL KNEE ARTHROPLASTY (TRIO): A RANDOMISED CONTROLLED TRIAL OF PHYSIOTHERAPY INTERVENTION

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Background: Physiotherapy delivered to all patients following TKA does not improve outcomes at one year. This study targeted physiotherapy to those at risk of poor outcome following TKA, and evaluated if a therapist-led intervention offered superior results compared to a home-exercise based protocol.

Methods: TRIO was a prospective RCT that recruited across 15 NHS centres. Patients were identified as "potential poor outcome" based on an Oxford Knee Score (OKS) classification at six weeks post-surgery and randomised to either therapist-led or home-exercise based protocols. Patients undertook 18 exercise sessions over six weeks. The therapist-led group undertook a progressive functional protocol (modified weekly) in contrast to a static home-exercise based regime. Evaluation took place following rehabilitation intervention, at six and 12 months post-surgery. Primary outcome was OKS at one year. Secondary outcomes included longitudinal "worst" and "average" pain scores, OKS, and satisfaction.

Results: Four thousand two hundred and sixty-four patients were screened, 1296 were eligible, 334 were randomised, eight were lost-to-follow-up. Clinically meaningful improvement in OKS was seen in both arms at one year ($p < 0.001$). Difference in one year OKS was 1.91 (95%CI, -0.17 - 3.99) points favouring the therapist-led arm ($p = 0.07$). Incorporating all time points, difference in OKS was 2.25 points (95% CI, 0.61-3.90, $p = 0.008$). Small, non-significant reductions (< 5%) in worst and average pain scores were observed favouring the therapist-led group. Enhanced satisfaction with pain relief (OR 1.65, $p < 0.02$), performance of functional tasks (OR 1.66, $p < 0.02$), and heavy tasks (OR 1.6, $p = 0.04$) was reported in the therapist-led group.

Conclusions: TRIO is the first study to target post-operative rehabilitation to patients at risk of poor outcomes. Both study arms made meaningful improvements by one year. There was no clinical benefit of outpatient-led rehabilitation, however satisfaction was higher in patients that received greater physiotherapist contact.

Implications: Physiotherapy can be targeted to patients struggling following TKA, however additional "hands-on-therapy" did not improve outcomes in this group.

Disclosure: Funding from Arthritis Research UK (now Versus Arthritis).

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VARIATION IN POST-OPERATIVE REHABILITATION FOLLOWING HIND AND MIDFOOT FUSION AND RECONSTRUCTIVE SURGERY IN THE UK: A SCOPING SURVEY FOR BOFAS MEMBERS

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Background: Hind/midfoot fusion and reconstructive surgery is performed to treat a range of foot/ankle conditions. Prolonged immobilisation in plaster is usually advised following this surgery. In recent years, there has been a paradigm shift in the rehabilitation of Achilles tendon rupture/ankle fracture with emphasis on early mobilisation. There is no consensus on post-operative rehabilitation for foot/ankle reconstructive surgery, in particular, the period of immobilisation.

Aims: To scope the post-operative rehabilitation practice of UK foot and ankle (F&A) surgeons.

Methods: A 10-question online survey was designed following qualitative synthesis of published literature. Following approval by Scientific Committee of BOFAS (British Orthopaedic Foot & Ankle Society), its members were surveyed over one month (February 2019).

Results: A total of 113 members responded; 89% were F&A surgeons. 46% of centres followed a local post-operative rehabilitation protocol, 54% were unsure/did not follow protocol. None (0%) mentioned national rehabilitation protocol. At two weeks, 13% of surgeons advised partial weight-bearing, this increased to 29% at six weeks. Less than 50% of surgeons advised full weight-bearing at six weeks. Less than 50% did not refer patients for physiotherapy following surgery. Strengthening exercises, proprioception and gait re-education were the most frequent treatments delivered. The most common outcome measures recorded were the MOxFQ, union rate, complications and pain. Plain x-ray and clinical findings were used to confirm union (96%). Sixty percent of respondents believed that starting weight-bearing at two weeks would reduce VTE risk, 63% believed that this could lead to an increase in non-union.

Conclusions: There is variation in practice by surgeons across the UK in terms of post-operative rehabilitation advice, with little in terms of research or guidance in this area.

Implications: Early rehabilitation could improve patient outcomes, yet the risk of non-union/other complications is a concern. Further research in the form of a multicentre trial is warranted to inform national guidance.

Disclosure: Nothing to disclose.

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PROVIDING ESCAPE-PAIN IN THE ORTHOPAEDIC PATHWAY MAY HELP PEOPLE MAKE BETTER CHOICES ABOUT SURGERY AND/OR IMPROVE POST-OPERATIVE OUTCOMES

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Background: A recent systematic review questioned the effectiveness of arthroplasty “prehabilitation” programmes, highlighting their variability, poor design, description and evaluation (Li Wang 2016). Moreover, plans to delay surgery is not an outcome used in prehabilitation studies despite its important clinical and cost implications. ESCAPE-pain is an evidence-based rehabilitation programme for osteoarthritis that combines education and exercise. It provides effective conservative management and is delivered in almost 200 centres across the UK. To see if ESCAPE-pain could be an effective prehabilitation programme we explored people's opinions about surgery after they had participated on the programme.

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Methods: We revisited the findings of our longitudinal, qualitative study that explored the experiences and opinions of people who had participated on ESCAPE-pain (Hurley 2010), specifically looking at their opinions about surgery and their willingness to undergo surgery. We also audited feedback from ~10,000 people who have undertaken the programme in clinical departments, leisure/community centres.

Results: Following participation on ESCAPE-pain people understood their problem better and the benefits of exercise. In addition, increased awareness of the effectiveness of interventions other than medication and surgery, greater optimism about their prognosis made them feel better able to cope with and self-manage their problems. As a consequence, some participants decided to delay surgery. These positives experiences and plans to delay surgery have been reported by some people who undertook ESCAPE-pain in clinical departments, leisure/community centres.

Conclusions: ESCAPE-pain could be utilised as a prehabilitation programme that provides people with the information, understanding and skills that would enable them to delay surgery, as corroborates other studies of programmes similar to ESCAPE-pain (Pisters 2007; Svege 2015; Skou 2018).

Implications: Utilising ESCAPE-pain as a prehabilitation programme might reduce inappropriate surgical referral, improve conversation rates, provide an alternative where surgery is inappropriate, contraindicated, unwanted, or improve post-operative outcomes. This could have important clinical and cost consequences.

Disclosure: Nothing to disclose.

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PREDICTING THE UNPREDICTABLE? A CLINICAL TOOL FOR PREDICTING MOBILITY AND DISCHARGE OUTCOMES IN HIP FRACTURE PATIENTS: A PILOT STUDY

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Background: Hip fractures are the most common reason for the elderly to undergo surgery in the UK. They often result in complex discharges and long lengths of stay. Independent variables have been identified to predict outcomes following hip fracture surgery, but as of yet there is no tool for predicting outcomes using patients' pre-admission characteristics.

Methods: Patients were included if they had: a unilateral hip fracture, full weight-bearing postoperative instructions, and no other fractures. The prediction tool scored patients on: age, cognition, baseline mobility, type of fracture, comorbidities. The prediction tool score (PTS) categorised patients from 1 - 5, from highest to lowest predicted function on discharge. The PTS was compared to the patients' cumulated ambulation score (CAS), a validated tool for predicting mobility and discharge outcomes. Length of stay, discharge destination and mobility on discharge were compared between categories. No costs were incurred with this study.

Results: Data was collected for 60 patients. A moderate correlation was found between the PTS and CAS, with a Pearson correlation coefficient of -0.55. Mean length of stay increased from category 1 to category 4 (7.6, 13.2, 23.9, 33 days) then decreased in category 5 patients (25.6 days). The percentage of patients discharged home decreased from category 1 to 5 (100%, 92%, 60%, 15%, 0%). Patients requiring 24-hour care increased from category 1 to 5 (0%, 0%, 7%, 54%, 86%). The percentage of patients independently mobile on discharge from category 1 to 5 was: 44%, 93%, 23%, 8%, 0%.

Conclusions: Moderate correlation was found between PTS and CAS. The prediction tool demonstrated that those with characteristics predicting a worse functional outcome post-surgery, were less likely to be discharged home, more likely to require 24-hour care and generally less likely to be independently mobile on discharge. The pilot study found that this novel predictive tool warrants further research.

Disclosure: Nothing to disclose.

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DRIVING REACTION TIME AFTER GANZ OSTEOTOMY FOR PATIENTS WITH HIP DYSPLASIA

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Introduction: Ganz osteotomy is increasingly being used to treat young adults with symptomatic hip dysplasia. Currently there is a lack of evidence to guide return to driving after this procedure. This study aimed to identify the length of time required after a Ganz osteotomy procedure before a patient can safely return to driving.

Methods: All patients undergoing Ganz osteotomy were assessed for suitability for the study. Inclusion criteria were: currently driving with a valid licence and being able to attend follow-up assessment. Baseline driving reaction time was assessed using a driving simulator. The simulation was repeated five times for each patient and reaction times recorded (thinking time, action time and total reaction time for braking at 30 mph). The driving simulation was repeated using the same methods at six weeks and 12 weeks post-operatively.

Results: Twenty-six patients were included (24 females, 2 males) with a mean age of 32 years (range: 19-50 years). Ten patients underwent left hip operations, 16 patients underwent right hip operations. The mean pre-operative times were: thinking time 0.48, action time 0.21, and total time 0.69 seconds. At six weeks post-operatively, mean action time increased to 0.26 seconds ($p = 0.012$) and mean total time increased to 0.78 seconds ($p = 0.013$). By 12 weeks post procedure, there was no significant difference in reaction times compared to baseline (mean thinking time 0.47 seconds, action time 0.23, total time 0.72, $p > 0.05$).

Conclusions: Most patients may not be safe to drive at six weeks following Ganz osteotomy procedures but should be safe to drive at 12 weeks post operatively. Individual patient factors should also be taken into consideration and driving simulation may be a useful tool in assessing these.

Disclosure: Nothing to disclose.

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PRIMARY OUTCOME MEASURES USED IN INTERVENTIONAL TRIALS OF ANKLE FRACTURES: A SYSTEMATIC REVIEWPRIMARY OUTCOME MEASURES USED IN INTERVENTIONAL TRIALS OF ANKLE FRACTURES: A SYSTEMATIC REVIEW

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Background: Ankle fractures are a significant injury with a rising incidence, particularly in the older population. When assessing treatment effects, it's important to ensure that outcome measures are valid for the construct they assess. There is a lack of evidence about the optimal method of measuring outcome in this patient population. The aim of this systematic review is to identify the primary outcome measures collected in randomised controlled trials of non-pharmacological interventions for ankle fractures in adults.

Methods: We completed a broad search of the literature using Medline, Embase, CINAHL, AMED and Cochrane CENTRAL Trials Databases and ISRCTN and ClinicalTrials.gov registries. For inclusion, articles were

randomised or quasi-randomised controlled trials evaluating non-pharmacological interventions for ankle fractures in an adult population. Two independent reviewers screened the full text articles to reduce bias in the process. We took care to only include the published results paper for registry records which had been subsequently published. We extracted the information on the primary outcome measure collected from each study and used descriptive statistics to summarise these.

Results: Searches returned 3,166 records. Following application of the eligibility criteria, 117 records were included in this review which collected 28 different primary outcome measures. The most frequently collected was the Olerud Molander Ankle Score (OMAS) (34 times), followed by radiological outcomes (21 times) and range of motion (10 times).

Conclusions: This review highlights the range of outcome measures used in interventional trials for ankle fracture. The frequent use of the OMAS is apparent, despite many researchers questioning its validity. Objective measures such as radiological outcome and range of motion are frequently collected as a primary outcome, with no available evidence that these are correlate to patient satisfaction. Formulation of a core outcome set for this type of trial would be advantageous to allow for generalisability across studies.

Disclosure: Nothing to disclose.

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A SYSTEMATIC REVIEW OF THE MEASUREMENT PROPERTIES OF ANKLE SPECIFIC PATIENT REPORTED OUTCOME MEASURES USED IN CLINICAL TRIALS OF INTERVENTIONS FOR ADULTS WITH ANKLE FRACTURE

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Background: The use of patient reported outcomes (PROMs) in orthopaedics is considered gold standard, however there is debate amongst researchers around the most appropriate one to use in the population of adults with ankle fractures. This systematic review aims to identify and appraise the evidence for the measurement properties of ankle-specific PROMs used in this population using COSMIN methodology.

Methods: We searched MEDLINE, Embase and CINAHL databases for evidence of the measurement properties of ankle specific PROMs. Included articles assessed the PROM performance in a sample of adults with ankle fracture, or majority (≥ 50%) of the sample. Two independent reviewers completed the screening. To assess methodological quality of the studies we used the COSMIN risk of bias checklist and summarised the evidence using the COSMIN quality criteria and GRADE approach. Two independent reviewers assessed the methodological quality and extracted the data for four of the seven articles to ensure a reduction in bias.

Results: The search returned a total of 308 records. Following application of the eligibility criteria, seven articles were included evaluating four ankle specific PROMs; AAOS, A-FORM, FFI and OMAS. None of the evidence scored higher than moderate on the overall quality of evidence assessment. The A-FORM is the only measure which has evidence of a robust development process within the patient population. There was little evidence for the measurement properties of the FFI and AAOS scores. The OMAS showed sufficient levels of reliability and construct validity against the hypothesis formulated a priori. No article assessed the responsiveness of the measures.

Conclusions: There is a lack of evidence for the measurement properties of the PROMs used in ankle fracture research and none had sufficient evidence for recommendation of use. Further validation of these outcome measures would enable the formulation of a core outcome set for this patient population.

Disclosure: Nothing to disclose.