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INCREASE IN KNEE MUSCLE STRENGTH IS ASSOCIATED WITH A DECREASE IN ACTIVITY LIMITATIONS IN PATIENTS WITH ESTABLISHED KNEE OSTEOARTHRITIS: A 2 YEAR FOLLOW UP STUDY IN THE AMS-OA COHORT

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Purpose: To examine the longitudinal association between knee muscle strength and activity limitations in patients with established knee osteoarthritis (OA), over two years.
Methods*:* Data from 186 patients with knee OA part of the Amsterdam Osteoarthritis cohort were gathered at baseline and at two-year follow up. Knee extensor and knee flexor muscle strength were assessed using an isokinetic dynamometer. Activity limitations were assessed using Western Ontario and McMaster University Osteoarthritis Index (WOMAC) - Physical Function subscale, Get Up and Go test (GUG) and the stairs test. Uni- and multivariate linear regression analyses were used to assess the association between changes in muscle strength and changes in activity limitations, adjusting for relevant confounders and baseline activity limitations.
Results: There was an overall 16% increase in mean knee muscle strength ($p < 0.001$), 19% increase in knee extensor muscle strength ($p < 0.001$) and 17% increase in knee flexor muscle strength ($p < 0.001$), over two years. Increased average knee muscle strength and knee flexor muscle strength were associated with better self-reported physical function (WOMAC) ($b = -5.9$, $p = 0.03$ and $b = -6.2$, $p = 0.05$), decreased time performing the GUG ($b = -2.3$, $p = 0.003$ and $b = -1.4$, $p = 0.05$) and decreased time performing the stairs test ($b = -4.4$, $p < 0.001$ and $b = -6.6$, $p < 0.001$). Increased extensor muscle strength was only associated with decreased time performing the stairs test ($b = -2.7$, $p < 0.001$).
Conclusion: The increase of knee muscle strength is associated with decreased activity limitations in patients with knee OA, over two years. These results suggest that muscle strength partially explains the between-patients variability in activity limitations.

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HIP ARTHROSCOPY FOR HIP OSTEOARTHRITIS: A SYSTEMATIC REVIEW OF OUTCOMES AND FACTORS INFLUENCING OUTCOMES

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Purpose: Hip arthroscopy is commonly performed for the diagnosis and treatment of hip pain in young to middle-aged people. Whilst outcomes generally appear favourable, outcomes for those with pre-operative intra-articular hip joint chondral pathology or radiographic hip joint osteoarthritis (OA) are uncertain. In addition, it is unclear whether certain factors such as age or co-existing pathology influence outcomes in this patient group. The aims of this systematic review were to: i) determine pain and physical function outcomes following hip arthroscopy for a range of procedures in people with hip OA; ii) identify factors that are associated with outcome; and iii) compare outcomes following hip arthroscopy between people with and without hip OA.
Methods: The systematic review protocol was developed in accordance with the PRISMA Statement. Studies were eligible for inclusion if they utilised participants aged 17 years or over who were scheduled for, or had undergone hip arthroscopy as a primary intervention for hip OA (defined as chondropathy at the time of surgery, or radiographic hip OA on pre-operative scans). Where possible, eligible papers were grouped based on whether a comparison between people with and without hip OA was undertaken. Studies were excluded if they: i) performed open surgeries as the primary intervention; ii) did not address hip OA as part of the study results; or iii) did not specify the surgical procedure performed for hip OA. The Downs and Black checklist was used to appraise the methodological quality of included studies. Studies scoring positively on at least 50% of items were considered to have a sufficiently low risk of bias and were included in subsequent analyses. Effect sizes were calculated where sufficient data was provided in the publication, and where effect sizes could not be calculated, study conclusions were presented. Factors that affected outcome were reported.
Results: Thirty three studies fulfilled all eligibility criteria, and were included in the systematic review. Methodological quality scores of the 33 included studies varied widely, from one to 15 out of 17 points (mean 9.4 (SD 3.0)). Twenty-one papers received a score of nine or more points and were included in further analyses. Follow-up times in included studies ranged from six months to 13 years. Fifteen out of 21 included studies examined pre-post outcomes for hip arthroscopy in people with hip OA, without comparison to a no-OA control group. Surgical procedures evaluated included chondral debridement, microfracture, fibrin adhesive and autologous chondrocyte transfer (ACT). Effect sizes were calculated for three studies and demonstrated moderate to large improvements in outcomes for pain and function. Six of the 21 studies provided direct comparison of hip arthroscopy outcomes between people with and without hip OA, with a mean ± SD quality score of 12 ± 2 [range 9 to 15]. Within-group effect sizes (pre to post-operatively) were calculated for three studies. Larger effect sizes were found in people without hip OA, ranging from 0.82(95% confidence intervals 0.75 to 0.90) to 2.26 (1.08 to 3.45); while more modest effect sizes were demonstrated in people with hip OA ranging from 0.44 (0.35 to 0.52) to 0.92 (0.28 to 1.55). Factors influencing poorer outcomes included age ≥40 years; higher degree of pre-operative radiographic degenerative change (joint space <2.0 mm or less than 50% of contra-lateral side), greater severity and intra-operative chondral damage on the femoral component of the hip; and surgical correction for pincer femoro-acetabular impingement, compared to surgery for cam impingement.
Conclusions: Patients with more severe hip OA appear to have worse pain and functional outcomes than those with less severe OA or no hip OA for hip arthroscopy alone, whether debridement, microfracture or labral interventions are performed. The use of fibrin adhesive and ACT appear to be the only currently used arthroscopic interventions that provide improved outcomes for people with localised severe cartilage disease. Findings suggest that targeting hip arthroscopic surgery, without correction of pincer impingement, towards those younger than 40 years of age with less severe pre-operative radiographic degenerative change, may improve surgical outcomes. Further high quality comparative studies are required, particularly investigating longer-term outcomes, and how the addition of conservative post-operative interventions such as physiotherapy may enhance surgical outcomes.

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OUTCOMES FOLLOWING PRIMARY ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION: RATES OF PATIENT ACCEPTABLE SYMPTOM STATE, TREATMENT FAILURE, AND ASSOCIATED KOOS SCORES IN THE NORWEGIAN NATIONAL KNEE LIGAMENT REGISTRY

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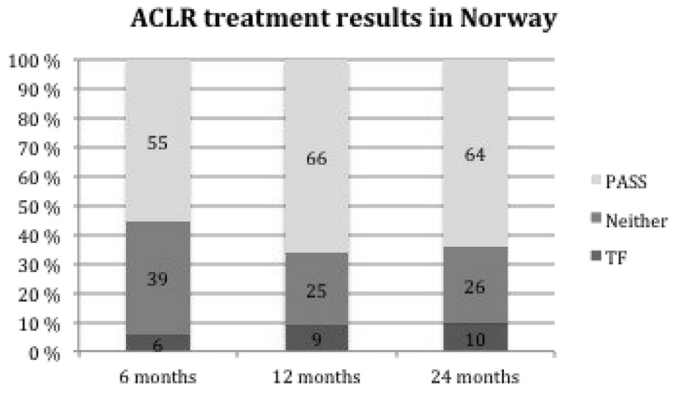
Purpose: To investigate treatment outcomes in terms of patients categorizing themselves as having achieved a Patient Acceptable Symptom State (PASS) or as Treatment Failures (TF) and associated Knee injury and Osteoarthritis Outcome Score (KOOS) following anterior cruciate ligament reconstruction (ACLR).
Methods: A cross-sectional approach was used. Data was collected in 2012 by randomly extracting 1197 patients from the Norwegian National Knee Ligament Registry at three time points: 397 at 6 (5–7) months, 400 at 12 (10–14) months and 400 at 24 (20–28) months postoperatively. Inclusion criteria were patients that had undergone unilateral primary surgical reconstruction of the ACL. The paper version of the KOOS was sent to the patients accompanied by the PASS and TF anchor questions. Patients that had not responded after two months were sent a reminder. The KOOS is a 42-item patient reported outcome



measure where 5 subscales are scored separately on a 0 (worst) to 100 (best) scale; Pain, Symptoms, Activities of Daily Living (ADL), Sport and Recreational activities (Sport/Rec) and Quality of Life (QOL). The PASS anchor question was: "Considering your knee function, do you feel that your current state is satisfactory? With knee function you should take into account all activities during your daily life, sport and recreational activities, your level of pain and other symptoms, and also your knee related quality of life." The TF anchor question was: "Would you consider your current state as being so unsatisfactory that you think the treatment has failed?". Both questions were answered "Yes" or "No". The patients that answered "Yes" to the PASS question were considered to have reached a PASS. The subgroup of patients that answered "No" to the PASS question and "Yes" to the TF question were considered to be treatment failures. The remaining patients were considered to be neither.

Results: 744 patients (45% women, mean age 28.7) responded: 246 (62%) at 6 months, 261 (65.3%) at 12 months and 237 (59.3%) at 24 months postoperatively. Figure 1 presents the percentages of patients reaching PASS and TF for each follow-up time point respectively. For all time points, 55–66% of patients undergoing an ACLR considered themselves to have reached a PASS postoperatively. 6–10% of the patients considered the treatment to have failed.

Mean KOOS scores at the three follow-up time-points for the patients reaching PASS ranged from 88–91 for the subscale Pain, 82–85 for Symptoms, 94–96 for the subscale ADL, 69–77 for the subscale Sport/Rec and 72–76 for the subscale QOL. The patients that considered that the treatment had failed had worse mean KOOS scores (Pain 57–58, Symptoms 54–57, ADL 69–73, Sport/Rec 26–32, QOL 25–31). The patients that did not consider their symptoms state acceptable, but not severe enough to consider themselves treatment failures, had mean KOOS scores in between the groups achieving PASS and TF (Pain 74–81, Symptoms 70–75, ADL 82–89, Sport/Rec 49–59 and QOL 51–57).

Conclusions: Half of the patients at six months and about two-thirds at 1–2 years consider themselves to have achieved an acceptable symptom state after receiving a primary ACLR. Mean KOOS scores were reflective of patient's perception about treatment outcome after ACLR. Patients achieving an acceptable symptom state had KOOS scores corresponding to on average no to mild problems while for treatment failures the KOOS scores corresponded to on average moderate to severe problems.

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THE ASSOCIATION BETWEEN HIP EFFUSION AND CLINICAL, MRI AND RADIOLOGICAL FINDINGS

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Purpose: The aim of this cross-sectional study was to describe the associations between hip effusion, hip pain, MRI-detected abnormalities and radiological hip osteoarthritis (ROA).

Methods: A total of 244 subjects from the Tasmanian Older Adult Cohort [TASOAC] with a right hip STIR-weighted MRI were included in this study. Presence and size of hip effusion was assessed at either the anterior or posterior side of the femoral head using OsiriX imaging software. The observer manually selected the MR slice (sagittal) with the largest effusion and measured the maximum cross-sectional area (CSA). Hip pain was determined by WOMAC [Western Ontario and McMaster Universities Osteoarthritis Index]. Presence of cartilage defects; hip BMLs and high cartilage signal were assessed. Finally, joint space narrowing (JSN, 0–3) and osteophytes (0–3) were assessed on X-ray using Altman's atlas. Log binomial regression and linear regression were applied to examine the relationships between hip effusion, hip pain, MRI and radiological findings.

Results: 228 [93%] subjects had hip effusion [presumably physiological and/or pathological] located, either at anterior or posterior sides of the femoral head. Subjects without and with hip effusion had no statistical differences in mean age and sex but subjects with hip effusion were heavier [BMI: 26.1 v 27.9, $p = 0.04$] in comparison to those without hip effusion. Hip effusion did not associate with presence or severity of hip pain. Larger hip effusion size was associated with presence of femoral defects, especially full thickness femoral defects [mean ratio: 1.34 95%CI 1.03, 1.65]. Acetabular defects did not associate with hip effusion. On the other hand, anterior hip effusion but not other sites, associated with presence of high cartilage signal [PR: 1.20 95%CI 1.01, 1.43]. Surprisingly, BMLs were associated with a significantly lower prevalence of effusion. Overall, radiological hip OA [grade>3] was associated with 8–10% higher prevalence of hip effusion and joint space narrowing [grade 3] was associated with higher prevalence of hip effusion [PR: 1.10 95%CI 1.04, 1.16].

Conclusion: Hip effusion is asymptomatic in this cohort but is associated with hip cartilage defects, JSN and osteophytes.

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OBESITY IS ASSOCIATED WITH REDUCED DISC HEIGHT IN THE LUMBER SPINE BUT NOT AT THE LUMBOSACRAL JUNCTION

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Purpose: Although obesity is a recognised risk factor for low back pain, our understanding of the mechanisms for this is limited. The evidence for an association between obesity and spinal structural changes is also conflicting. The aim of this study was to investigate the relationships between obesity, disc height and low back pain in the lumbosacral spine.

Methods: 72 participants from a community-based study of musculoskeletal health underwent Magnetic Resonance Imaging from the T12 vertebral body to the sacrum. Disc height was measured from L1/2 to L5/S1. Body mass index was measured and low back pain in the previous 2 weeks was assessed.

Results: The mean and total lumbar disc heights were reduced in obese compared to non-obese individuals (mean height(SE): 1.04(0.03)cm vs 1.14(0.02)cm, $p = 0.01$; total height(SE): 4.16(0.11)cm vs 4.57(0.10)cm, $p = 0.01$), after adjusting for age, gender and height. While obesity was associated with reduced disc heights at the L1/2 and L3/4 levels, there were no significant relationship at the lumbosacral junction (mean difference (95%CI): 0.10(−0.14, 0.16)cm, $p = 0.89$). Both mean and total lumbar disc heights were negatively associated with recent pain after adjusting for age, gender and height (mean height: mean difference (95%CI): 0.09(0.02, 0.17)cm, $p = 0.02$; total height: mean difference (95% CI): 0.37(0.07,0.66)cm, $p = 0.02$). However, these relationships were no longer significant when we also adjusted for weight (mean height; mean difference (95%CI): 0.07(−0.009,0.15)cm, $p = 0.08$; total height: mean difference (95%CI): 0.28(−0.04, 0.60)cm, $p = 0.08$). There were no significant relationships between disc height and recent pain at the lumbosacral junction.

Conclusions: Obesity was associated with reduced disc height in the lumbar spine, but not at the lumbosacral junction, suggesting these joints may have different risk factors. There was also evidence for an inter-relationship between obesity, lumbar disc height and recent pain, suggesting that structural changes have a role in back pain and may in part explain the association between obesity and back pain.