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*on osteoarthritis: comprehensive care*

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a prospective longitudinal cohort study

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## INFLUENCE OF FAMILIAL FACTORS ON RADIOLOGIC DISEASE PROGRESSION OVER TWO YEARS IN SIBLINGS WITH OSTEOARTHRITIS AT MULTIPLE SITES: A PROSPECTIVE LONGITUDINAL COHORT STUDY

*Arthritis & Rheumatism (Arthritis Care & Research)*, 2007 May 15; 57(4):626–32

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**BACKGROUND & AIM:** It is only in the last decade that the importance of genetic factors in the development of osteoarthritis has been recognized. However, very little is known about the contribution of genetic factors to the progression of osteoarthritis. The aim of this study was to gain insight into the contribution of familial factors to osteoarthritis progression in sibling pairs.

**STUDY DESIGN:** Prospective, longitudinal cohort study.

**ENDPOINT:** Radiologic outcome.

**METHOD:** Of the probands and siblings included in the Genetics, Arthrosis and Progression study, 105 white sibling pairs with osteoarthritis at multiple sites were eligible for the 2-year follow-up study. Radiographs of the hands, knees, and hips were obtained using a standard protocol at baseline and after 2 years. Radiologic progression was defined as a minimum of a 1-point increase in the total score for joint space narrowing (JSN) or osteophyte total score over 2 years. Odds ratios (OR) were calculated, comparing the siblings of probands with disease progression with the siblings of probands without disease progression.

**RESULTS:** Radiographic follow-up was complete for 92 sibling pairs. Most of the probands and siblings were women (84% and 75%, respectively) and were of similar age ( $59.9 \pm 6.9$  years and  $60.9 \pm 7.0$  years, respectively) and body mass index (BMI;  $26.7 \pm 3.9$  kg/m<sup>2</sup> and  $26.2 \pm 3.6$  g/m<sup>2</sup>, respectively). At 2 years, radiologic progression had occurred in 47% of probands and 34% of siblings based on JSN total scores, and in 42% of probands and 37% of siblings based on osteophyte total scores. The OR, adjusted for BMI, age, and sex, of a sibling having radiologic progression if the proband had progression was 3.0 (95% confidence interval, CI, 1.2–7.8) for JSN progression and 1.5 (95% CI 0.6–3.6) for osteophyte progression. The magnitude of the increase in JSN score in probands was associated with disease progression in siblings: the adjusted OR for osteoarthritis progression in the sibling was 2.4 (0.8–7.4) for a JSN total score increase of 1 point in the proband, and 4.0 (95% CI 1.2–12.8) for a JSN total score increase of more than 2 points in the proband.

**CONCLUSION:** Familial factors appear to influence radiologic disease progression in patients with osteoarthritis at multiple sites.

## VALIDATION OF A SHORT FORM OF THE WESTERN ONTARIO AND MCMASTER UNIVERSITIES OSTEOARTHRITIS INDEX FUNCTION SUBSCALE IN HIP AND KNEE OSTEOARTHRITIS

*Arthritis & Rheumatism (Arthritis Care & Research)*, 2007 May; 57(4)633–8

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**BACKGROUND & AIM:** The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) function scale is a validated, self-administered, 17-item scale used extensively in clinical research into hip and knee osteoarthritis. A shorter (8-item) version of this scale has recently been developed to improve its applicability in routine practice. The aim of this study was to validate this short form.

**STUDY DESIGN:** Prospective cohort study.

**ENDPOINT:** Interscale agreement.

**METHOD:** Patients with hip and/or knee osteoarthritis receiving treatment with a nonsteroidal anti-inflammatory drug (NSAID) were included in the study, either at the onset of treatment or at a switch from one NSAID to another. At baseline and after 4 weeks of treatment, half of the patients completed the original 17-item version of the WOMAC function scale (long-form group) and the other half of the patients completed the short form (short-form group). At the 4-week visit, the patients also assessed their response to therapy on a numerical rating scale. Agreement between responses on the two forms of the WOMAC was investigated using a Bland-Altman approach. Responsiveness to

change (by standardized response mean), reproducibility (intraclass correlation coefficient), and internal consistency (Cronbach's alpha) were computed for both forms.

**RESULTS:** Data from 878 patients, 661 (75.3%) with knee and 217 (24.7%) with hip osteoarthritis were available for analysis. At baseline, 24% of patients completing the long form had missing data for at least one item compared with 6% of patients completing the short form. The mean score for the short form was higher than that for the long form (mean  $\pm$  SD difference  $-4.3 \pm 4.8$  on a scale of 0–100). Standardized response means were 0.61 and 0.73, intraclass correlation coefficients were 0.76 and 0.68, and Cronbach's alphas were 0.93 and 0.85 for the long and short forms, respectively. Both forms correlated with functional impairment, pain, and global assessment.

**CONCLUSION:** While the short and long forms of the WOMAC had equivalent properties (responsiveness, reproducibility, and validity), there were fewer missing data with the short form. This, together with its simplicity and easy use, may make the short form appropriate for routine clinical use as an alternative to the long form for the assessment of function in patients with osteoarthritis of the hip or knee.

## META-ANALYSIS: CHONDROITIN FOR OSTEOARTHRITIS OF THE KNEE OR HIP

*Annals of Internal Medicine*, 2007 April 17; 146(8):580–90

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**BACKGROUND & AIM:** Analgesics and nonsteroidal anti-inflammatory drugs are the most commonly prescribed agents for osteoarthritis but are associated with serious gastrointestinal and cardiovascular adverse events. Furthermore, these agents do not affect the underlying disease. Attempts have been made to influence the loss of cartilage in osteoarthritis by administering chondroitin, a constituent of cartilage. However, recent high-quality, large-scale trials have reported conflicting results on the efficacy of chondroitin in the treatment of patients with osteoarthritis. The aim of this study was to determine the efficacy of chondroitin on pain-related outcomes in a meta-analysis of available randomized controlled trials.

**STUDY DESIGN:** Meta-analysis.

**ENDPOINTS:** Pain-related outcomes; adverse events.

**METHOD:** The literature was searched for randomized or quasi-randomized controlled trials (published between 1966 and 2006) that compared chondroitin with placebo or with no treatment in patients with osteoarthritis of the knee or hip. Effect sizes for each study were calculated from the differences in the means of pain-related outcomes between treatment and control groups at

the end of the trial, divided by the pooled standard deviation. Trials were combined by using random-effects meta-analysis.

**RESULTS:** Twenty trials (involving 3846 patients) met the inclusion and quality criteria and were included in the meta-analysis. The meta-analysis identified a large effect size of  $-0.75$  (95% confidence interval, CI,  $-0.99$  to  $-0.50$ ), which corresponded to a difference in pain scores of 1.6 cm on a 10-cm visual analog scale between chondroitin and placebo groups. However, there was a high degree of intertrial heterogeneity ( $I^2=92\%$ ;  $p<0.001$ ). When the meta-analysis was restricted to the three trials with large sample sizes (which included 40% of the randomly assigned patients) and used an intention-to-treat analysis, the effect size was  $-0.03$  (95% CI  $-0.13$  to  $0.07$ ;  $I^2 = 0\%$ ), corresponding to a difference of 0.6 mm on a 10-cm visual analog scale. Meta-analysis of 12 trials gave a pooled relative risk of 0.99 (95% CI 0.76–1.31) for any adverse event.

**CONCLUSIONS:** There is no robust evidence to support the use of chondroitin to prevent or reduce joint pain in osteoarthritis and thus its use in clinical practice should be discouraged. There is also no evidence to suggest that chondroitin is unsafe.

## A RANDOMIZED CROSSOVER TRIAL OF A WEDGED INSOLE FOR TREATMENT OF KNEE OSTEOARTHRITIS

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**BACKGROUND & AIM:** Japanese investigators have developed a lateral-wedge insole that shifts the distribution of load laterally in the foot, leading to a lateral shift in the load across the knee, thereby reducing the load in the medial compartment. A pilot study demonstrated that the use of the lateral-wedge shoe insert resulted in a significant reduction of the adduction moment, which is a measure of the dynamic medial load across the knee. The aim of this study was to determine whether the use of a lateral-wedge insert reduces pain in patients with medial knee osteoarthritis.

**STUDY DESIGN:** Double-blind, randomized, crossover trial.

**ENDPOINTS:** Knee pain (primary); use of analgesic and anti-inflammatory medications for knee pain, chair-stand time, 50-foot walk time, and disability (secondary).

**METHOD:** A crossover trial design was used as this design usually provides greater statistical power for detecting small therapeutic effects. Subjects were at least 50 years old, had medial tibiofemoral narrowing on posteroanterior semiflexed radiographs, and had scores indicative of at least moderate pain for two of the

five items of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). Disability was measured with the WOMAC disability subscale. In phase one, 90 subjects were randomized to use either a 5 degree lateral-wedge insole or a neutral insole for 6 weeks. Inserts were removed, and after a 4-week washout period the subjects were crossed over to the other treatment for 6 weeks.

**RESULTS:** Treatment efficacy was the same whether subjects were randomized first to the wedged insert or to the neutral insert. The mean difference in pain between use of the wedged insert and use of the neutral insert was 13.8 points (95% confidence interval -3.9 to 31.4;  $p=0.13$ ) on the 500-point WOMAC pain scale. Twenty-one patients achieved a minimal clinical improvement (WOMAC pain score  $\geq 50$  points) with the wedged insert and 19 with the neutral insert ( $p=0.75$ ). Similarly small and nonsignificant effects were found for the secondary outcomes. The most common side effects were blisters on the tops of the toes.

**CONCLUSION:** Lateral-wedge shoe inserts are not efficacious in reducing pain in patients with medial knee osteoarthritis.

## REPRODUCIBILITY AND SENSITIVITY TO CHANGE OF FOUR SCORING METHODS FOR THE RADIOLOGICAL ASSESSMENT OF OSTEOARTHRITIS OF THE HAND

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**BACKGROUND & AIM:** Osteoarthritis of the hand could represent a valuable model to evaluate treatments for osteoarthritis, but this would require methods to assess the radiologic severity of the disease. Various methods have been proposed, and the aim of this study was to compare, in the same patient sample, the precision and sensitivity to change of four radiographic scoring methods for the assessment of the severity and progression of structural changes in hand osteoarthritis.

**STUDY DESIGN:** Assessment of radiographic scoring methods.

**ENDPOINTS:** Precision; sensitivity to change.

**METHOD:** Pairs of radiographs of the hand taken at baseline and at 12 months from 105 patients were selected at random from those included in a randomized trial of hand osteoarthritis. Two trained readers each used four methods to score the radiographs: global score (range 0–32); Kellgren–Lawrence (KL) grading (range

0–120); Kallman radiographic scale (range 0–208); and the Verbruggen numerical scoring system (range 0–218.4). Individual scores were normalized. Intraclass coefficients (ICCs) were used to assess inter- and intrareader reliability. Sensitivity to change was estimated on the basis of differences in each score between months 0 and 12, using the standardized response mean (SRM; mean change divided by the standard deviation of change).

**RESULTS:** ICC values for inter-reader reproducibility were highest for the Verbruggen (0.996) and KL (0.951) scales, followed by the global score (0.859) and the Kallman scale (0.706). ICC values for intrareader reproducibility were high for all methods, ranging from 0.922 to 0.999. Longitudinal intrareader reliability was best with the Kallman and KL scales (ICC 0.986 and 0.990), followed by the Verbruggen (0.941) and global methods (0.939). The Kallman scale showed the highest sensitivity to change (see Table). The global and Verbruggen scorings were the quickest to perform.

**CONCLUSION:** While all four scales perform well with respect to inter-reader and intrareader reliability and sensitivity and can detect structural changes over 12 months, the Verbruggen and Kallman scales are better regarding reliability and the Kallman scale regarding sensitivity to change.

Sensitivity to change, expressed as the standardized response mean (SRM), of four radiographic scoring methods used by two observers

Scoring method	Observer 1 SRM (95% CI)	Observer 2 SRM (95% CI)
Global score	0.17 (0.00–0.37)	0.27 (0.06–0.47)
Kellgren-Lawrence	0.17 (0.00–0.34)	0.24 (0.05–0.42)
Kallman	0.26 (0.05–0.46)	0.29 (0.00–0.51)
Verbruggen	0.18 (0.00–0.36)	0.27 (0.07–0.45)

## MULTICENTER, RANDOMIZED, DOUBLE-BLIND, ACTIVE-CONTROLLED, PARALLEL- GROUP TRIAL OF THE LONG-TERM (6-12 MONTHS) SAFETY OF ACETAMINOPHEN IN ADULT PATIENTS WITH OSTEOARTHRITIS

*Clinical Therapeutics, 2006 February; 28(2):222-35*

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**BACKGROUND & AIM:** Acetaminophen is a currently recommended first-line analgesic for the treatment of osteoarthritis. Clinical trials evaluating the use of acetaminophen for osteoarthritis have demonstrated efficacy with a favorable tolerability profile, but only for periods of up to 12 weeks, even though many patients may require treatment for several months or even years for persistent or recurrent osteoarthritic pain. The aim of this study was to evaluate the safety of acetaminophen compared with naproxen administered for up to 12 months in adult patients with osteoarthritic pain.

**STUDY DESIGN:** Multicenter, multidose, single-dummy, randomized, double-blind, active-controlled, parallel-group study.

**ENDPOINTS:** Adverse events; hepatic (aminotransferase activities) and renal (serum creatinine) function.

**METHOD:** Patients ( $n=581$ , mean age 59.3 years) with mild-to-moderate osteoarthritic pain of the hip or knee were randomized to receive acetaminophen (4 g/day) or naproxen (750 mg/day) for 12 months (group 1) or 6 months (group 2). Data for the two groups were combined for analysis.

**RESULTS:** Of the 290 patients receiving acetaminophen, 96 completed 6 months

and 55 completed 12 months of treatment; of the 291 patients receiving naproxen, 124 completed 6 months and 80 completed 12 months of treatment. Adverse events were reported by 71.8% of patients receiving acetaminophen and by 73.6% of patients receiving naproxen and resulted in treatment withdrawal in 24.7% and 22.2% of the patients, respectively. Of the adverse events, constipation and peripheral edema occurred more often in the naproxen group than in the acetaminophen group (9.9% versus 3.1%,  $p<0.002$ , and 3.9% versus 1.0%,  $p<0.033$ , respectively). No serious, treatment-related adverse event was reported in the acetaminophen group, but one patient receiving naproxen experienced gastrointestinal bleeding that was considered both serious and treatment related. No clinically important abnormalities in liver function (aminotransferase levels  $\geq 2$  times the upper limit of the reference range) or renal function (creatinine levels  $\geq 1.5$  times the upper limit of the reference range) were observed in either treatment group.

**CONCLUSION:** Acetaminophen (4 g/day) appears to be generally well tolerated as long-term (up to 12 months) treatment for osteoarthritic pain of the hip or knee, being as effective as naproxen in relieving pain and stiffness and in improving physical function.

## PHYSICAL ACTIVITY FOR OSTEOARTHRITIS MANAGEMENT: A RANDOMIZED CONTROLLED CLINICAL TRIAL EVALUATING HYDROTHERAPY OR TAI CHI CLASSES

*Arthritis & Rheumatism (Arthritis Care & Research)*, 2007 April; 57(3):407–14

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**BACKGROUND & AIM:** Although patients with osteoarthritis of the hips or knees benefit from regular moderate physical activity combining strength training and aerobic exercise, ongoing adherence is poor among such patients. Hydrotherapy, which takes advantage of the weight-relieving properties of water, and Tai Chi, with its slow continuous movements, have been claimed to be suitable for improving the functioning and quality of life of patients with osteoarthritis. The aim of this study was to determine whether hydrotherapy or Tai Chi classes improve joint pain and physical function in patients with chronic symptomatic osteoarthritis of the hips or knees.

**STUDY DESIGN:** Randomized controlled trial.

**ENDPOINTS:** Pain; physical function; general health status; physical performance.

**METHOD:** A total of 152 older patients with chronic symptomatic hip or knee osteoarthritis were randomly allocated to 12 weeks of hydrotherapy classes ( $n=55$ ), Tai Chi classes ( $n=56$ ), or a waiting list control group ( $n=41$ ). Outcomes were assessed 12 and 24 weeks after randomization and included pain and physical function (Western Ontario and McMaster Universities Osteoarthritis Index;

WOMAC), general health status (Medical Outcomes Study Short Form 12 Health Survey, version 2; SF-12), and physical performance (Up and Go test, 50-foot walk time, timed stair climb).

**RESULTS:** At 12 weeks and compared with controls, the mean WOMAC pain and physical function scores (range 0–100) had improved by 6.5 (95% confidence interval, CI, 0.4–12.7) and 10.5 (95% CI 3.6–14.5) points, respectively, in the hydrotherapy group and by 5.2 (95% CI –0.8 to 11.1) and 9.7 (95% CI 2.8–16.7) points, respectively, in the Tai Chi group. While the SF-12 physical component summary score improved significantly in both treatment groups, the physical performance measures improved significantly in the hydrotherapy group only. All significant improvements were still present at 24 weeks. In this almost exclusively white sample, class attendance was higher for hydrotherapy (81% attended at least half of the 24 classes) than for Tai Chi (61%).

**CONCLUSION:** Both hydrotherapy and Tai Chi classes can improve the physical function and joint pain of elderly patients with chronic symptomatic knee or hip osteoarthritis, and this improvement is sustained for 12 weeks in most patients.

## TREATMENT OF KNEE PAIN IN OLDER ADULTS IN PRIMARY CARE: DEVELOPMENT OF AN EVIDENCE-BASED MODEL OF CARE

*Rheumatology*, 2007 April; 46:638–48

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**BACKGROUND & AIM:** Most knee pain in older adults is attributed to osteoarthritis, a term that is applied both to a specific pathologic disease of the joint identified by typical radiographic features and to the clinical syndrome of pain and stiffness in the joint. Not all painful knees show the radiographic changes of osteoarthritis. Knee pain, rather than knee osteoarthritis, is the problem encountered in primary care, and guidance on how to manage symptoms, rather than pathology, is needed. While evidence-based guidance for the management of knee osteoarthritis has been developed, there are no guidelines for the management of knee pain in primary care. The aim of this study was to develop a stepped model of care for the treatment of knee pain in older adults in primary care based on recommended interventions.

**STUDY DESIGN:** Guideline development.

**ENDPOINT:** Evidence-based, practical, model of care for knee pain in older adults in primary care.

**METHOD:** The literature was searched to identify interventions recommended for knee osteoarthritis or knee pain in clinical guidelines and systematic reviews. Thereafter consensus was sought among members of the Primary Care Rheumatology Society to allocate these

interventions to a stepped model of care.

**RESULTS:** A four-step consensus model based on 27 recommended interventions identified from 77 publications was developed. Although the 10 interventions of step 1 should be offered to all older adults with knee pain, these interventions are accessible without the need to seek professional help (self-care). These interventions include exercise, weight loss, paracetamol, and written information. People with persistent pain and disability should then be offered the interventions of step 2 (10 interventions) or step 3 (6 interventions). These interventions include pharmacologic interventions such as nonsteroidal anti-inflammatory drugs and opioid drugs (step 2) and intra-articular corticosteroids (step 3), and nonpharmacologic interventions such as physical therapy and walking aids (step 2) and occupational therapy and cognitive-behavioral therapy (step 3). If these interventions fail, patients should be offered surgery (step 4).

**CONCLUSION:** This evidence-based and practical model of care for knee pain in older patients in primary care enables treatment to be tailored to the needs of the individual patient, with the choice of intervention depending on patient preferences or characteristics, physician expertise, and local availability.

## PROGNOSTIC FACTORS OF PROGRESSION OF OSTEOARTHRITIS OF THE KNEE: A SYSTEMATIC REVIEW OF OBSERVATIONAL STUDIES

*Arthritis & Rheumatism (Arthritis Care & Research)*, 2007 February 15; 57(1):13–26

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**BACKGROUND & AIM:** As the general population ages, the prevalence of osteoarthritis is expected to increase over the next few decades by about 40%. In order to optimize the management of osteoarthritis, it is important to identify factors that are predictive of disease progression. The aim of this study was to carry out a systematic review of prognostic factors for disease progression identified in observational studies and to assess the supporting evidence.

**STUDY DESIGN:** Systematic review.

**ENDPOINTS:** Prognostic factors for disease progression.

**METHODS:** The methodological quality of relevant observational studies identified from a review of the literature was assessed. Because of the heterogeneity of the studies identified, statistical pooling of the extracted data was not feasible. Hence, associations between prognostic factors and disease progression were summarized according to a best evidence synthesis.

**RESULTS:** Thirty-six high-quality studies were included in this review. The best evidence synthesis found strong evidence that the serum level of hyaluronic acid and generalized osteoarthritis were associated with radiologic progression of knee osteoarthritis, whereas sex, knee injury, quadriceps

strength, and regular sport activities were not. Knee pain and radiologic severity of osteoarthritis at baseline were not strongly associated with osteoarthritis progression. There was conflicting evidence for an association between disease progression and several factors, including body mass index, bone density, keratan sulfate level, and age, and there was limited evidence for an association between progression of knee osteoarthritis and synovial fluid volume, dietary intake of vitamin D, and alignment (varus/valgus) of the joint. There was also limited evidence for a lack of association between progression of osteoarthritis and estrogen and uric acid concentrations, smoking, meniscectomy, several markers of bone or cartilage turnover, and the clinical diagnosis of localized osteoarthritis.

**CONCLUSIONS:** Generalized osteoarthritis and serum levels of hyaluronic acid appear to be associated with radiologic progression of knee osteoarthritis, whereas knee pain, radiologic severity at baseline, sex, quadriceps strength, knee injury, and regular sport activities appear not to be associated with disease progression. Evidence for other factors is limited or conflicting. It is important to identify prognostic factors for disease progression because if modifiable, these factors can be manipulated to reduce the progression of osteoarthritis, and if not modifiable to identify high-risk patients.

## DIFFERENCES IN OUTCOMES OF OBESE WOMEN AND MEN UNDERGOING PRIMARY TOTAL HIP ARTHROPLASTY

*Arthritis & Rheumatism (Arthritis Care & Research)*, 2007 March; 57(2):327–334

AUTHORS: LÜBBEKE A, STERN R, GARAVAGLIA G, ZURCHER L, HOFFMEYER P

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**BACKGROUND & AIM:** The prevalence of hip osteoarthritis, and the subsequent need for total hip arthroplasty (THA), is higher among obese patients, which is of concern because obesity is becoming more common. Little is known about the effect of obesity on hip replacement, with existing studies reporting conflicting results. The aim of this study was to evaluate the effect of obesity on the incidence of complications (infection, dislocation, and revision), functional outcome, and patient satisfaction 5 years after primary THA.

**STUDY DESIGN:** Prospective cohort study.

**ENDPOINTS:** Functional outcome; occurrence of complications.

**METHOD:** Patients who underwent primary THA (2495 hips) between 1996 and 2005 were included in the study. Rates and rate ratios were used to compare the incidence of complications in obese (body mass index, BMI,  $\geq 30$  kg/m<sup>2</sup>) and nonobese patients (BMI < 30 kg/m<sup>2</sup>), stratified by sex. Functional outcome was measured using the Harris Hip Score and Western Ontario and McMaster Universities Osteoarthritis Index.

**RESULTS:** The adjusted incidence rate ratio for infection was higher in obese individuals (4.4; 95% confidence interval, CI,

1.8–10.8). This effect of obesity was limited to women, with the incidence rate ratio for infection being 16.1 (95% CI 3.4–75.7) in obese women compared with nonobese women; the incidence rate ratio was 1.0 (95% CI 0.2–5.3) for obese men versus nonobese men. The adjusted incidence rate ratio for dislocation (obese versus nonobese patients) was 2.4 (95% CI 1.4–4.2), with a higher rate increase in obese women than in obese men. The adjusted rate ratio for hip revision was 2.0 (95% CI 0.9–4.8). More obese women than nonobese women required reoperation for septic loosening (rate ratio 4.3; 95% CI 1–19). At the 5-year follow-up, functional outcome and satisfaction were slightly lower in obese women than in nonobese women, partly due to the higher rate of complications. No difference was seen between obese and nonobese men.

**CONCLUSIONS:** Obesity is associated with more complications (infection, dislocation, and revision surgery for septic loosening) 5 years after primary THA, with obese women (but not obese men) having a poorer functional outcome and slightly lower satisfaction than their nonobese counterparts. Obese women should be informed of the increased risk of complications and may benefit from losing weight before surgery.

## THE IMPACT OF MUSCULOSKELETAL HAND PROBLEMS IN OLDER ADULTS: FINDINGS FROM THE NORTH STAFFORDSHIRE OSTEOARTHRITIS PROJECT (NORSTOP)

*Rheumatology*, 2007 June; 46(6):963–7

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**BACKGROUND & AIM:** Although musculoskeletal diseases are a common cause of disability and joint pain, and particularly in the elderly, relatively little research attention has been given to hand problems and their impact on daily life. The aim of this study was to investigate the impact of hand problems in community-dwelling older adults and how this varies with age and sex.

**STUDY DESIGN:** Population survey.

**ENDPOINTS:** Hand pain; hand disability.

**METHOD:** Adults older than 50 years from three general practices were sent a questionnaire asking about general demographics, hand pain, and any other hand problems. Responders with hand problems were sent a second questionnaire that included questions about the duration of hand problems, hand dominance, history of injury or surgery, and lower limb pain. Health status was assessed with the Arthritis Impact Measurement Scales 2 (AIMS2). Severe disability was defined as a score of 4 or more points on the hand and finger function sub-

scale. One-month estimates of the period prevalence of hand pain and severe hand disability were calculated by age and sex.

**RESULTS:** In total 2113 participants completed the second questionnaire. The prevalence of hand problems was higher in women than in men and increased slightly with age (see Table). Most hand pain was bilateral and persistent (experienced >3 months in the last year). The mean AIMS2 score was  $4.03 \pm 2.5$  among participants with hand problems and increased with age in both men and women. The estimated 1-month period prevalence of hand pain was 30.8%. More women than men had severe functional limitations (29.3% versus 18.3%), and these problems increased in prevalence in the oldest age groups. The 1-month period prevalence of severely disabling hand problems was 12.3%. Women were less satisfied than men with the appearance of their hands, and the level of satisfaction decreased with age in women but not in men.

**CONCLUSIONS:** Hand problems are common among adults older than 50 years and have a substantial impact on daily activities. Women and the very old appear to be particularly vulnerable to the influence of hand problems in everyday life.

Prevalence of hand problems by age

	Age 50–59 years	60–69 years	70–79 years	80+ years	Total
Women	51.4%	53.6%	53.8%	56.1%	53.4%
Men	38.2%	41.0%	40.7%	43.5%	40.2%
Total	45.3%	47.8%	48.2%	51.8%	47.8%

# EULAR EVIDENCE BASED RECOMMENDATIONS FOR THE MANAGEMENT OF HAND OSTEOARTHRITIS: REPORT OF A TASK FORCE OF THE EULAR STANDING COMMITTEE FOR INTERNATIONAL CLINICAL STUDIES INCLUDING THERAPEUTICS (ESCISIT)

*Annals of the Rheumatic Diseases*, 2007 March; 66(3):377–88

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**BACKGROUND & AIM:** Because of differences in anatomy, function, risk factors, and outcomes, osteoarthritis occurring at different sites of the body may respond differently to the same treatment. Interventions for osteoarthritis should therefore be investigated in a site-specific fashion. The aim of this study was to report the evidence-based recommendations for the management of osteoarthritis of the hand developed by the European League Against Rheumatism (EULAR) Osteoarthritis Task Force.

**STUDY DESIGN:** Expert guidelines.

**ENDPOINTS:** Evidence-based recommendations.

**METHOD:** The Task Force comprised 16 rheumatologists, 1 physiatrist, 1 orthopedic surgeon, 2 allied health professionals, and 1 evidence-based medicine expert, from 15 European countries. Each participant contributed up to 10 propositions describing key clinical points for the management of hand osteoarthritis. Final recommendations were agreed using a Delphi consensus approach. A systematic search of the literature identified the best available research evidence to support each proposition. Experts were asked to score the strength of their recommendation for each proposition according to research evidence (efficacy, safety, and cost-effectiveness) and their clinical expertise (logistics, patients' perceived acceptance, and tolerability).

**RESULTS:** Eleven key recommendations for the treatment of osteoarthritis of the hand involving 17 treatment modalities were agreed. Only two of the recommendations were supported by the highest level of evidence (level 1a; meta-analysis of randomized controlled trials); two other recommendations were supported by other research evidence; the remaining recommendations were supported by expert opinion only. Of the treatment modalities recommended, only six were supported by research evidence, namely, education plus exercise, nonsteroidal anti-inflammatory drugs (NSAIDs), cyclo-oxygenase 2 inhibitors, topical NSAIDs, topical capsaicin, and chondroitin sulfate. Other modalities (such as, local application of heat, use of thumb splints, paracetamol as preferred oral analgesic, intra-articular injection of corticosteroid, surgery) were supported either by evidence extrapolated from studies of osteoarthritis at other joint sites or by expert opinion.

**CONCLUSIONS:** Eleven key recommendations for the treatment of osteoarthritis of the hand have been developed on the basis of research-based evidence and expert consensus. However, many of these recommendations are based solely on expert opinion due to the lack of research evidence in this disease area, which emphasizes the need for appropriate well-conducted trials.

## DECISION-MAKING REGARDING TOTAL KNEE REPLACEMENT SURGERY: A QUALITATIVE META-SYNTHESIS

*BMC Health Services Research, 2007 April 10; 7:52–61*

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**BACKGROUND & AIM:** Although the number of total knee replacements (TKRs) performed in the UK rose by more than 20,000 between 2002 and 2004, some reports suggest a poor uptake of TKR in the UK. The aim of this study was to identify factors that influence patient decision-making regarding TKR surgery.

**STUDY DESIGN:** Qualitative meta-synthesis.

**ENDPOINTS:** Factors influencing the decision-making process of TKR surgery.

**METHOD:** This meta-analysis used meta-ethnography to synthesize qualitative research and adopted a seven-step approach. Ten qualitative studies investigating the experience of TKR surgery were included in the synthesis.

**RESULTS:** The synthesis revealed that the decision whether to undergo TKR surgery was shaped by four major considerations, namely, the person's interpretation of aging, treatment expectations, amount of pain experienced, and coping strategies. A person's social and cultural view of aging influences judgments about being deserving of surgery – patients consider knee osteoarthritis to be a normal part of aging and adapt their life accordingly. They

tend to think that other people are more afflicted and should have priority for surgery. Treatment expectations are shaped by the balance between living a life on hold while waiting for surgery and the risks associated with surgery – patients do not like the uncertainty of not knowing when surgery is scheduled and are worried about the risks of surgery. The decision to have TKR is linked to the amount of pain being endured, and the way that information about TKR is communicated to patients – some patients tend to believe they need to be in constant pain and virtually unable to move before being considered eligible for surgery whereas others are influenced by their perception of pain and information obtained from different sources. And lastly, a person's coping strategies and life context determine the short and longer term outcomes of TKR surgery – the postoperative outcome is influenced by the patient's determination, spouses, friends, and the social network. All studies showed the doctor-patient relationship to be important to the decision-making process – patients want to trust their physicians and value the advice they give.

**CONCLUSION:** The decision-making process regarding TKR surgery is extremely complex, and patients have to weigh several considerations before coming to a decision.

# SYMPTOMATIC HAND OSTEOARTHRITIS IN THE UNITED STATES. PREVALENCE AND FUNCTIONAL IMPAIRMENT ESTIMATES FROM THE THIRD U.S. NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY, 1991–1994

*American Journal of Physical Medicine & Rehabilitation*, 2007 January; 86(1):12–21

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**BACKGROUND & AIM:** Although arthritis, with osteoarthritis being the most common form, is a leading cause of disability among older people in the USA, the general population prevalence of symptomatic osteoarthritis of the hand is not known. The Third National Health and Nutrition Examination Survey (NHANES III), a nationally representative survey, has collected arthritis physical examination data and hand radiographs for US adults older than 60 years. The aim of this study was to estimate the US prevalence of symptomatic hand osteoarthritis from information collected in the survey, using American College of Rheumatology (ACR) physical examination criteria.

**STUDY DESIGN:** Cross-sectional health survey.

**ENDPOINTS:** Prevalence of symptomatic hand osteoarthritis; functional and activity limitations; analgesic use.

**METHOD:** Data from phase II of NHANES III (1991–1994) for 2498 persons were analyzed. Arthritis-related deformities were recorded by joint row and by right or left hand. Three analytic groups were formed: symptomatic interphalangeal joint osteoarthritis (symptomatic Heberden's nodes), symptomatic proximal interphalangeal joint osteoarthritis (symptomatic Bouchard's nodes), and symptomatic carpal-metacarpal (CMC) joint squaring. Data for demographics, pain history, analgesic use, and functional limitations were obtained by interview.

**RESULTS:** Fifty-eight percent of the individuals had Heberden's nodes, 29.9% had Bouchard's nodes, and 18.2% had first CMC deformities. Women had significantly more CMC joint deformity than men (24.3% versus 10.3%;  $p < 0.01$ ). In total, 5.4% of respondents had symptomatic Heberden's nodes, 4.7% symptomatic Bouchard's nodes, and 1.9% symptomatic first CMC joint deformities. The prevalence of symptomatic hand osteoarthritis (according to ACR criteria) in this population was 8%, representing about 2.9 million people. Multivariate analysis showed the prevalence of symptomatic hand osteoarthritis to increase significantly with age. It was highest in Mexican Americans and lowest among non-Hispanic blacks; there were no gender differences. Symptomatic hand osteoarthritis was associated with self-reported difficulty lifting 10 lbs (odds ratio, OR, 2.31), dressing (OR 3.77), eating (OR 3.44), and frequent use of analgesics (OR 1.87), especially acetaminophen (OR 2.15) but not nonsteroidal anti-inflammatory drugs (OR 1.24).

**CONCLUSIONS:** Symptomatic hand osteoarthritis affects 1 in 12 older US adults, representing a major cause of functional impairment in this population. The NHANES III data enable assessment of the overall prevalence and impact of this problem and will facilitate public health planning for this disorder.

## EFFECT OF RECREATIONAL PHYSICAL ACTIVITIES ON THE DEVELOPMENT OF KNEE OSTEOARTHRITIS IN OLDER ADULTS OF DIFFERENT WEIGHTS: THE FRAMINGHAM STUDY

*Arthritis & Rheumatism (Arthritis Care & Research)*, 2007 February 15; 57(1):6–12

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**BACKGROUND & AIM:** There have been no definitive longitudinal studies that document the effect of regular exercise on the development of osteoarthritis in older people. The aim of this study was to perform evaluations over a period long enough to allow the development of knee osteoarthritis in a cohort of older people of different weights undertaking regular exercise.

**STUDY DESIGN:** Longitudinal cohort study.

**ENDPOINTS:** Symptomatic knee osteoarthritis; tibiofemoral joint space loss; incident radiographic knee osteoarthritis.

**METHOD:** Subjects from a community-based sample with no osteoarthritis at baseline were issued with questionnaires that asked about their physical activity and how they would compare it with that of others. Subjects underwent knee radiographs and also answered questions on knee symptoms. The same evaluations were performed approximately 9 years later. Tibiofemoral and patellofemoral compartments were assessed on radiographs for osteoarthritis features, and scored for tibiofemoral joint space narrowing. The relationship between each recreational activity and osteoarthritis

development was evaluated after adjusting for the correlation between the knees, the history of knee injury, sex, age, and body mass index.

**RESULTS:** Of the initial subjects (mean age at baseline 53.2 years), 75% ( $n=1279$ ) had radiographs taken as part of the follow-up examination. There was no association between an increase, or decrease, in the risk of osteoarthritis and jogging, recreational walking, frequently working up a sweat, or high activity levels relative to those of their peers; neither was physical activity associated with joint space loss. The type of physical activity did not increase the risk of osteoarthritis among subjects with a body mass index above the median (27.7 kg/m<sup>2</sup> for men and 25.7 kg/m<sup>2</sup> for women; mean BMI > 30 kg/m<sup>2</sup> for both).

**CONCLUSIONS:** Recreational exercise bears no relation to an increased, or decreased, risk of developing osteoarthritis among middle-aged and elderly people without osteoarthritis in the knee(s), regardless of how knee osteoarthritis is defined. Neither does physical activity contribute to the increased risk of osteoarthritis among overweight subjects.

## EFFICACY AND SAFETY OF OPIOIDS FOR OSTEOARTHRITIS: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

*Osteoarthritis and Cartilage*, 2007 March 28; [Epub ahead of print]

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**BACKGROUND & AIMS:** Oral paracetamol and nonsteroidal anti-inflammatory drugs (NSAIDs) are recommended first-line treatments for osteoarthritis of the knee and hip. Both have drawbacks: paracetamol is often inadequate for treating osteoarthritic pain, and the use of NSAIDs is associated with gastrointestinal and renal complications, especially in elderly patients. Opioid analgesics are recommended for the treatment of intense pain and for the treatment of moderate-to-severe osteoarthritis that does not respond to first-line treatment. The aims of this study were to determine the effectiveness of opioids in the treatment of osteoarthritic pain and in improving physical function in patients with osteoarthritis, and to evaluate their safety.

**STUDY DESIGN:** Meta-analysis of randomized controlled trials.

**ENDPOINTS:** Pain intensity; physical function; adverse events; treatment discontinuation due to adverse effects.

**METHOD:** A systematic literature search identified 18 randomized controlled trials evaluating the efficacy and/or the safety of opioids compared with placebo or nonopioid analgesics in patients with osteoarthritis (3244 patients received opioids and 1612 patients received placebo; mean age  $61\pm 5$  years and  $62\pm 3$  years, respectively). The

mean trial duration was  $13\pm 18$  weeks. The effect size was calculated for each trial to assess the magnitude of the treatment effect and the number needed to harm (NNH).

**RESULTS:** Compared with placebo, the pooled effect size of all opioids for improving pain intensity and physical function was  $-0.79$  (95% confidence interval  $-0.98$  to  $-0.59$ ) and  $-0.31$  (95% confidence interval  $-0.39$  to  $-0.24$ ), respectively. The most frequent adverse events reported with opioids were nausea (30%), constipation (23%), dizziness (20%), somnolence (18%), and vomiting (13%). While the adverse events were reversible and none were life threatening, the average treatment discontinuation rate due to toxicity was 25% in the opioid group and 7% in the placebo group. The NNH for all classes of opioids compared with placebo was 5: it was 4 for strong opioids and 9 for weak opioids. Too few studies ( $n=4$ ) compared opioids with nonopioid analgesics (paracetamol and NSAIDs) to enable robust comparisons to be made.

**CONCLUSIONS:** Opioids significantly decrease pain intensity and cause minor improvements in physical function compared with placebo in patients with osteoarthritis; however, the benefits of opioids may be limited by the occurrence of adverse events.

## EFFECT OF WEIGHT REDUCTION IN OBESE PATIENTS DIAGNOSED WITH KNEE OSTEOARTHRITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

*Annals of the Rheumatic Diseases*, 2007 April; 66(4):433–9

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**BACKGROUND & AIM:** Current European guidelines for the management of knee osteoarthritis recommend weight loss in overweight patients. However, this recommendation is primarily supported by expert opinion, and so the aim of this study was to conduct a meta-analysis of randomized controlled trials to evaluate whether clinical benefits are evident in patients with knee osteoarthritis after weight loss.

**STUDY DESIGN:** Meta-analysis.

**ENDPOINTS:** Pain; self-reported disability.

**METHOD:** The literature was systematically searched for randomized controlled trials that reported a weight change in patients with knee osteoarthritis as the only difference in intervention between the treated and control groups: concomitant treatments (medication, exercise, behavioral therapy, etc) had to be identical in the treated and control groups. Outcome Measures for Arthritis Clinical Trials III outcome variables (pain, self-reported disability, and patient global evaluation) were considered for analysis. Effect sizes were calculated for each study and meta-regression analyses were performed using weighted estimates from the random effects analyses. An effect size of 0.2 was considered small, 0.5 moderate (and would be

recognized clinically), and greater than 0.8 large.

**RESULTS:** Of 35 potential trials identified, only 4 (involving 454 patients) met the inclusion criteria. Pooled effect sizes for pain and physical disability were 0.20 (95% confidence interval, CI, 0–0.39,  $p < 0.05$ ) and 0.23 (95% CI 0.04–0.42,  $p = 0.02$ ) after a weight loss of 6.1 kg. Pooling the data from the trials reporting the (global) Lequesne index as an explicit outcome produced a nonsignificant, inconsistent weighted pooled effect size of 0.58 (95% confidence interval –0.4 to 1.56,  $p = 0.25$ ) after a weight loss of 4.7 kg. Meta-regression analysis revealed that a weight loss of at least 5.1%, or a weight loss of at least 0.24% a week, was predictive of a significant reduction in self-reported disability.

**CONCLUSIONS:** Weight loss in patients with osteoarthritis leads to a significant reduction in both pain and physical disability. In addition, weight loss is predictive of diminished disability. The results support the use of weight-loss regimens in the clinical management of patients with osteoarthritis, and overweight patients with osteoarthritis should be encouraged to reduce their body weight by at least 5% over a 20-week period in order to achieve symptomatic relief.

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