

# SportsMedUpdate

## BONE MARROW OEDEMA AND ITS RELATION TO PROGRESSION OF KNEE OSTEOARTHRITIS

Felson DT, McLaughlin S, Goggins J, et al. *Ann Intern Med* 2003;139:330-6

### Background

Lesions on bone scan which correspond to bone marrow edema lesions seen on magnetic resonance imaging (MRI) may increase the risk for radiographic deterioration in knee osteoarthritis.

### Research question/s:

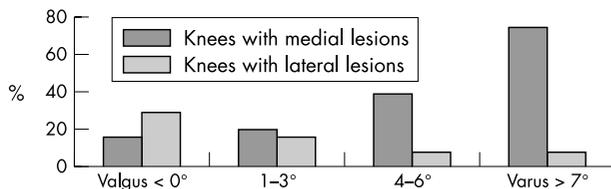
Do oedema lesions in the sub-articular bone in patients with knee osteoarthritis increase the risk for radiographic progression and are the lesions associated with limb malalignment?

### Methodology

**Subjects:** 233 subjects (> 45 yrs) with symptomatic knee osteoarthritis. **Experimental procedure:** Subjects underwent baseline assessments including MRI of the knee and fluoroscopically positioned radiography. Repeated radiography (at 15 months) with long-limb films was obtained to assess mechanical alignment (varus, valgus). During follow up at 15 and 30 months, progression (defined as an increase over follow-up in medial or lateral joint space narrowing) was measured.

**Measures of outcome:** Relation of medial bone marrow oedema lesions to medial progression and lateral lesions to lateral progression, before and after adjustment for limb alignment.

### Main finding/s



**Progression:** 36% of knees with medial lesions showed medial progression compared with 8.1% of knees without lesions (OR for progression, 6.5 [95% CI, 3.0-14.0]); 26% of knees with lateral lesions showed lateral progression compared with 5.5% of knees without lesions (8.1%) (OR for progression, 6.1 [95% CI, 2.2-16.5]).

### Conclusion/s:

The presence of bone marrow oedema on MRI is a potent risk factor for structural deterioration in knee osteoarthritis, and its relation to progression is explained in part by its association with limb alignment.

**Evidence based rating:** 7/10 **Clinical interest rating:** 8/10

**Type of study:** Prospective cohort study

**Methodological considerations:** Well conducted study, malalignment was assessed in middle not beginning of study, most subjects were men

**Keywords:** knee, osteoarthritis, malalignment, bone marrow oedema

## ARTHROSCOPIC TREATMENT OF OSTEOCHONDRAL LESIONS OF THE TALUS

Robinson DE, Winson IG, Harries WJ, et al. *J Bone Joint Surg [BR]* 2003;85-B:989-93

### Background:

Non-operative treatment or excision alone of osteochondral lesions of the talus give poor results, but it appears that both excision, curettage and drilling and excision and curettage alone led to good outcomes, but there is no evidence available to verify this.

© 2004 MPAH Medical cc. All rights reserved. www.sportsmedupdate.info

### Research question/s:

What is the outcome of arthroscopic treatment of osteochondral lesions of the talus, and which factors predispose to a poor result?

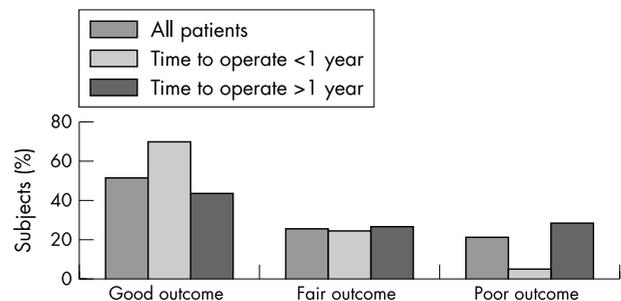
### Methodology:

**Subjects:** 65 patients (male = 46, female = 19 women, age 34.25 years). **Experimental procedure:** All subjects presented with osteochondral lesions of the talus and underwent arthroscopic treatment, after clinical assessment (including time to diagnosis, side of lesion). Subjects were then followed up for a mean of 3.5 years

**Measures of outcome:** Subjective measure of outcome (good, fair, poor).

### Main finding/s:

**Descriptive findings of osteochondral lesions:** The medial aspect of the talus was affected in 69% (45/65) patients and the lateral aspect in 31% (20/65), and all the lateral lesions and 75% (35/45) of the medial lesions were traumatic in origin. Medial lesions presented later than lateral lesions (3 vs. 1.5 years) and had a much greater incidence of cystic change (46% vs. 8%).



Drilling and curettage was associated with a good (56%) or fair (23%) outcome in patients undergoing this treatment method. Cystic lesions had a poor outcome in 53% of patients. There was no association between outcome and the patient's age.

### Conclusion/s:

Arthroscopic treatment of osteochondral lesion of the talus was associated with a subjectively good (52%) or fair (26%) outcome, and this was improved if the time to operation was less than 1 year (good = 70%, fair = 25%). Excision and curettage led to better results than excision and drilling of the base.

**Clinical interest rating:** 7/10 **Evidence based rating:** 5/10

**Type of study:** Case series

**Methodological considerations:** Case series, subjective measures of outcome

**Keywords:** ankle, talus, osteochondral lesions, injury, arthroscopy

## MAGNETIC RESONANCE IMAGING OF THE ASYMPTOMATIC SHOULDER OF OVERHEAD ATHLETES

Connor PM, Banks DM, Tyson AB, et al. *Am J Sports Med* 2003;31:724-7

### Background:

Magnetic resonance imaging (MRI) findings in shoulders of asymptomatic individuals but not asymptomatic elite overhead athletes have been described.

### Research question/s:

What is the incidence of magnetic resonance imaging abnormalities in asymptomatic dominant and non-dominant shoulders of elite overhead athletes?

### Methodology:

**Subjects:** 20 elite overhead athletes (OHA), and 10 control (CON) subjects.

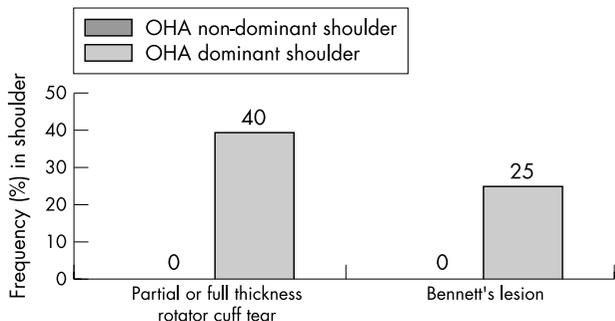
**Experimental procedure:** Detailed MRI scans of the dominant (d) and non-dominant (nd) shoulders of the OHA group and the CON group

were obtained and interpreted by 3 experienced musculoskeletal radiologists for multiple variables, including rotator cuff appearance. A 5 year follow up interview was performed to determine whether MRI abnormalities represented clinical false-positive findings or symptomatic shoulders in evolution.

*Measures of outcome:* Frequency (%) of MRI abnormalities in groups.

**Main finding/s:**

Frequency of rotator cuff tears: 40% of the OHA-d shoulders had findings consistent with partial- or full-thickness tears of the rotator cuff compared with 0% in the OHA-nd shoulders. Frequency of Bennett's lesion: 25% OHA-d shoulders had evidence of Bennett's lesions compared with 0% of the OHA-nd shoulders.



*5 year follow-up:* None of the athletes had any subjective symptoms or required any evaluation or treatment for shoulder-related problems during the 5 year study period.

**Conclusion/s:**

The frequency of MRI abnormalities in the dominant shoulder of elite overhead athletes is 40% for partial or complete rotator cuff tears, and 25% for Bennett's lesions, but in a 5 year follow-up shoulders remained asymptomatic, indicating that MRI alone should not be used as basis for operative intervention.

**Clinical interest rating:** 7.5/10    **Evidence based rating:** 6.5/10  
**Type of study:** Case control study with prospective cohort component  
**Methodological considerations:** Descriptive study, small sample size, no cause effect  
**Keywords:** magnetic resonance imaging, shoulder, overhead athlete, rotator cuff

**RANDOMISED CLINICAL TRIAL OF LUMBAR INSTRUMENTED FUSION AND COGNITIVE INTERVENTION AND EXERCISES IN PATIENTS WITH CHRONIC LOW BACK PAIN AND DISC DEGENERATION**

Brox JI, Sorensen R, Friis A, *et al.* *Spine* 2003;**28**:1913-21

**Background:**

There are very few (possibly only one) randomised studies that have evaluated the effectiveness of lumbar fusion for chronic low back pain.

**Research question/s:**

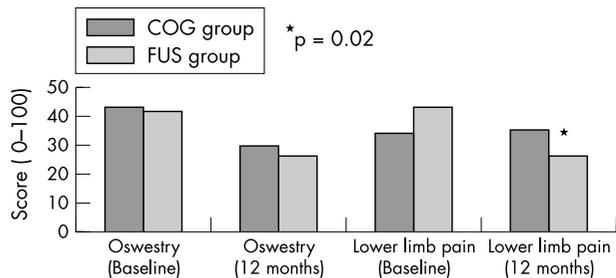
Is a lumbar-instrumented fusion more effective compared with cognitive intervention and exercises in patients with chronic low back pain and disc degeneration?

**Methodology:**

*Subjects:* 64 patients (25-60 years) with low back pain > 1 year and evidence of disc degeneration (L4-L5 and/or L5-S1) using radiographic examination.

*Experimental procedure:* Subjects were randomised to either lumbar fusion with posterior transpedicular screws and postoperative physiotherapy (FUS group), or cognitive intervention and exercises (COG). The cognitive intervention consisted of a lecture to give the patient an understanding that ordinary physical activity would not harm the disc and a recommendation to use the back and bend it. This was reinforced by three daily physical exercise sessions for 3 weeks.

*Measures of outcome:* Components of the Oswestry Disability Index (baseline and 12 months).



**Main finding/s:**

Improvements in back pain, use of analgesics, emotional distress, life satisfaction, and return to work were not different between groups. Fear-avoidance beliefs and fingertip-floor distance were reduced more after non-operative treatment, and lower limb pain was reduced more after surgery. The success rate-according to an independent observer was 76% in the COG group. The early complication rate in the surgical group was 18%.

**Conclusion/s:**

Apart from a greater reduction in lower limb pain, lumbar fusion did not improve chronic lower back pain more than cognitive therapy and exercises.

**Clinical interest rating:** 7/10    **Evidence based rating:** 7.5/10  
**Type of study:** Single blind randomized study  
**Methodological considerations:** Well conducted study  
**Keywords:** chronic low back pain, disc degeneration, randomised clinical trial, lumbar fusion, cognitive intervention, exercises, fear-avoidance

**NONOPERATIVE TREATMENT OF ACUTE RUPTURE OF THE ACHILLES TENDON**

Weber M, Niemann M, Lanz R, *et al.* *Am J Sports Med* 2003;**31**:685-91

**Background:**

Achilles tendon rupture can be treated either non-operatively or operatively, with both methods giving excellent results.

**Research question/s:**

Does a new non-operative treatment protocol for Achilles tendon ruptures compare favorably with operative treatment?

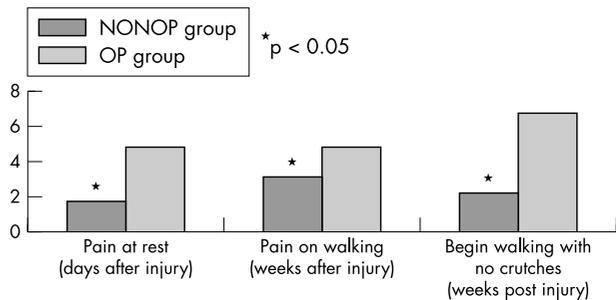
**Methodology:**

*Subjects:* 47 patients with Achilles tendon ruptures.

*Experimental procedure:* 23 patients were treated non-operatively with an equinus ankle cast and boot (NONOP) and their outcomes were compared with 24 patients treated operatively (OP). Muscle strengthening and walking with full weight bearing were started as soon as tolerated in both groups. Follow-up examinations were performed for 18 patients in the NONOP group after 23 months and 15 in the OP group after 49 months.

*Measures of outcome:* 100 point evaluation score (Thermann), dorsiflexion, calf circumference, single leg heel raises, plantar flexion peak torque, total isokinetic work pain on max exertion, overall assessment.

**Main finding/s:**



There was a more rapid subsidence of pain, return to unaided walking, and return to work in the NONOP group. All other outcomes were similar in both groups. The complication rate was similar, except for

re-ruptures: four early in the NONOP group and one late in the OP group. Two types of re-ruptures occurred in the NONOP group: 1) normally healing tendon subjected to new trauma, re-rupturing in the healing zone, and achieving a good result with the continued non-operative treatment; and 2) tendon failing proximal to the initial rupture at the muscle-tendon junction, without trauma, requiring operative repair and augmentation.

**Conclusion/s:**

Non-operative treatment for Achilles tendon rupture with an equinus ankle cast and boot resulted in a more rapid subsidence of pain, return to unaided walking, and return to work compared with operative treatment in a retrospective cohort study.

**Evidence based rating:** 6.5/10 **Clinical interest rating:** 7/10  
**Type of study:** Retrospective cohort study  
**Methodological considerations:** Non-random allocation of groups, retrospective data  
**Keywords:** Achilles tendon rupture, surgery, non-operative treatment

**USE OF MEDICATIONS AND DIETARY SUPPLEMENTS IN LATER YEARS AMONG MALE FORMER TOP-LEVEL ATHLETES**

Kujala UM, Sarna S, Kaprio J. *Arch Intern Med* 2003;163:1064-8

**Background:**

The association between sports participation and the need of medications and dietary supplements later in life is unknown.

**Research question/s:**

Do former athletes use more medications and dietary supplements?

**Methodology:**

**Subjects:** 2026 former male athletes (ATH group) (represented Finland in international events from 1920-1965) and 1401 control subjects who had been classified healthy at the age of 20 years (CON group).

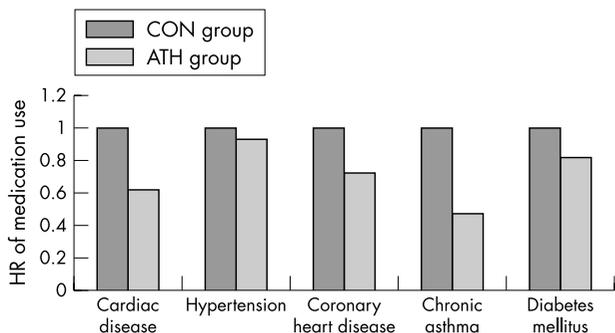
**Experimental procedure:** Subjects completed a questionnaire containing details about reimbursable medications for hypertension, cardiac insufficiency, coronary heart disease, diabetes and asthma as well as the use of non-steroidal anti-inflammatory drugs, antacids and specific vitamin and mineral supplements for at least 60 days during the past year.

**Measures of outcome:** Age-adjusted hazard ratios (HR) and odds ratio (OR) for medication/supplement use.

**Main finding/s:**

**Medication use for cardiorespiratory disease:** The probability of initiating medication in the ATH group was decreased for cardiac insufficiency (HR 0.61; 95% CI 0.50-0.74; p<0.001), coronary heart disease (HR 0.72; 95% CI 0.58-0.89; p=0.002), and asthma (HR 0.47; 95% CI, 0.36-0.66; p<0.001).

**Medication use for hypertension and diabetes:** The probability of initiation of treatment with regular medication for endurance athletes but not for power athletes in the ATH group was reduced for hypertension (HR 0.73; 95% CI 0.54-1.00; p=0.046), and diabetes (HR 0.38; 95% CI 0.20-0.73; p=0.004).



**Other medication use:** The ATH group used fewer non-steroidal anti-inflammatory drugs (OR 0.48; 95% CI 0.35-0.67; p<0.001) and antacids (OR 0.49; 95% CI 0.31-0.77; p=0.002) but more vitamin A

(OR 1.87; 95% CI 1.24-2.82; p=0.003), vitamin B (OR 2.26; 95% CI 1.64-3.12; p<0.001), vitamin C (OR 1.96; 95% CI 1.45-2.63; p<0.001), selenium (OR 1.62; 95% CI 1.15-2.28; p=0.006), and iron (OR 2.35; 95% CI 1.33-4.15; p=0.003).

**Conclusion/s:**

Former top-level athletes (1) use less medication for cardiac disease and asthma, (2) use less non-steroidal anti-inflammatory drugs and antacids, and (3) use more dietary supplements (vitamins, anti-oxidants and iron).

**Evidence based rating:** 7.5/10 **Clinical interest rating:** 8/10  
**Type of study:** Retrospective cohort study  
**Methodological considerations:** Well conducted study  
**Keywords:** former athletes, dietary supplements, medications, nutrition

**A MULTICENTRE, SINGLE-MASKED STUDY OF MEDIAL, NEUTRAL AND LATERAL PATELLAR TAPING IN INDIVIDUALS WITH PATELLOFEMORAL PAIN SYNDROME**

Wilson T, Carter N, Thomas G. *J Orthop Sports Phys Ther* 2003;33:437-48

**Background:**

Patellar taping, thought to work by medially realigning the patella, is commonly used as a treatment for patellofemoral pain syndrome (PFPS). The effects of different methods of taping that attempt to realign the patella in different directions on PFPS have not been well studied.

**Research question/s:**

Do three different methods of patellar taping (neutral, medial, and lateral direction) reduce pain during step down in individuals with PFPS?

**Methodology:**

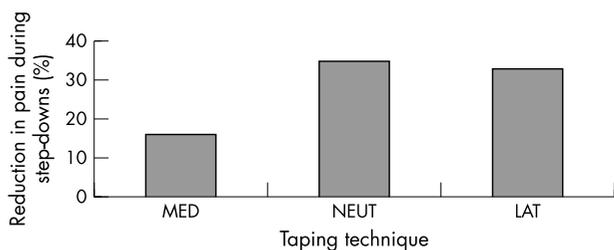
**Subjects:** 71 patients with PFPS (39 men, 32 women; 34 ± 10 years) from 3 different treatment centres.

**Experimental procedure:** Each subject performed four single step-downs from a standard 8-inch (20.3 cm) platform, initially with the patella untaped (CON) and then with the patella taped in a medial (MED), neutral (NEUT) and lateral (LAT) direction. The sequence of taping was randomly allocated and patients were masked to the method used. Pain was recorded on a standard 11-point numerical pain rating scale.

**Measures of outcome:** Pain (VAS) in four conditions.

**Main finding/s:**

All the methods of taping significantly decreased pain when compared to the CON condition (p<0.0001). The NEUT and LAT techniques produced a significantly greater degree of pain relief (p<0.0001) than the MED glide technique.



**Conclusion/s:**

Patellar taping produced an immediate decrease in pain during step-down in patients with PFPS irrespective of how the taping was applied (medial, lateral or neutral), indicating that it is unlikely that taping works by altering patellar position. These data raise questions as to the mechanism of action of patellar taping.

**Evidence based rating:** 7/10 **Clinical interest rating:** 7.5/10  
**Type of study:** Multicentre, single-blind, randomised clinical trial  
**Methodological considerations:** Well conducted study, no double blind control, no long term effect of taping studied  
**Keywords:** knee, patellofemoral pain syndrome, taping, rehabilitation