consequences, personal control, treatment control and illness identity all showed significant associations with quality of life (SF-36 domains) and disability (HAQ). Timeline scores were unrelated to HAQ or other outcome measures. Linear regression analyses (Table) showed IPQ-R scores for personal control and consequences had stronger associations with disability (HAQ) than clinical measures like DAS28. Overall, beliefs about illness identity, consequences and control explained 20% variance in HAQ scores and 24% variance in psychological functioning scores (SF-36 mental health summary score).

**Conclusions:** The medical model of care, focusing on treating RA inflammation, overlooks many potentially modifiable aspects of RA. There is a strong case for developing interventions that target beliefs, particularly those that enhance personal control and the ability to manage illness consequences. A cognitive-behavioural approach that combines education, skills training and maintenance practice.

**Disclosure:** The authors have declared no conflicts of interest.

**Soft Tissue and Regional Musculoskeletal Disease, Fibromyalgia**

**634. A DEVELOPED LOW BACK PAIN QUESTIONNAIRE: USE FOR STANDARD CARE OF PATIENTS WITH LOW BACK PAIN**

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**Background:** Objective: To assess the validity, reliability and comprehensibility of a developed low back pain (LBP) questionnaire for use in standard clinical care of patients suffering from LBP.

**Methods:** The low back pain questionnaire was developed on a one-page sheet. One side includes 10 questions to stratify patients suffering from LBP according to their clinical presentation and whether their symptoms are secondary to local disorder or systemic disease. The other side includes: assessment of functional disability using 4 items to assess psychological distress, duration of morning stiffness as well as visual analogue numerical scales for pain, patient global status, and fatigue. Consecutively, we evaluated scoring from LBP completed the questionnaire. Scores are entered in boxes on the right side of the page for each item. Clinical assessment for every patient was carried out. X-ray spinal was requested for all patients. MRI scan for lower back were requested if the clinical presentation was suggestive of local disorder. Every patient completed also the Hamilton questionnaire for depression and anxiety. Blood check for full blood count, liver and kidney functions, lipid profile, immunology profile, thyroid functions, HbA1C, protein electrophoresis, inflammatory markers (ESR and CRP) were carried out for every patient. Test-retest reliability as well as comprehensibility of the model were also assessed.

**Results:** 146 patients completed the questionnaire. The test was reliable as demonstrated by a high-standardized alpha value and minimal changes recorded in the 2nd from the 1st test. The HAQ-II (functional aspect) was significantly correlated with different parameters assessed giving an r-value higher than 0.5 with both patient global assessment, and pain score. The psychological aspect of the LBP questionnaire correlated significantly with fatigue score, pain score, and patient global assessment; the highest r-value was with fatigue score (0.815). The psychological score was significantly correlated with depression as well as anxiety scores as demonstrated by Hamilton scale for depression and anxiety (p < 0.001). The LBP questionnaire showed also a high degree of comprehensibility (94.8%).

**Conclusions:** The developed questionnaire is a reliable and valid instrument for assessment of LBP suffering LBP. Being short, rapid and comprehensive, this adds more to its applicability. The data support the value of completion of the simple 2 page patient questionnaire, which provides a quantitative written documented record by the patients, at their visit to the rheumatology clinic.

**Disclosure:** The authors have declared no conflicts of interest.

**635. ANTI-TNF THERAPY WITH ADALIMUMAB FOR RADICULOPATHY**

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**Background:** The favorable therapeutic outcomes of TNF alpha inhibition in the treatment of such disorders as rheumatoid arthritis, spondyloarthropathies and other systemic connective tissue diseases has now been extended into conditions in which the inflammatory process is localized as that found in patients with back pain and sciatica secondary to discogenic radiculopathy. There is a good evidence now from a number of studies that the exposed herniated nucleus pulposus can initiate a local inflammatory reaction at the level of the disc and adjacent nerve roots in which the secretion of TNF is abundant aggravating the “ radiculitis” component of the sciatic pain even in the absence of demonstrable compression of the roots as evident by Magnetic Resonance Imaging (MRI) studies.

**Methods:** A cohort of ten patients with back pain and sciatica attending our rheumatology clinic were selected for the study on the basis of:

1. severe radicular type of pain graded by the patient as grade 70 or greater on a visual analogue scale (VAS) of 0 - 100 grade.
2. Chronic pain, occurring daily for at least 3 months and over.
3. Treatment resistance as evidenced by lack of response or partial response with relapse following disc surgery or epidural steroid injections.

All the 10 patients were given each (off-label) a subcutaneous injection of Adalimumab 40 mg which was repeated once only after 2 weeks.

Initial patients assessment included: history, physical examination with emphasis on straight leg raising (SLR) angle, plain spinal radiographs and spinal MRI.

**Results:** As a whole, all patients show some degree of improvement. The median back pain VAS score reduction was 35. The median back pain VAS score reduction was 37. The median SLR angle improvement was 45.

**Conclusions:** TNF inhibition with this fully human monoclonal antibody therapy Adalimumab has resulted in a moderate clinical improvement in the majority of this cohort of selected patients population with discogenic radicular sciatic pain. Though this study has its limitations, mainly the small number of patients sample which was done after confirmation that the patient had at least 3-6 months of unresponsive back pain and sciatica with negative diagnostic results. In a control group in which the placebo response might have been obtained. Never the less, the study results do high lighten the clinical utility of this form of therapy. Further wider scale studies are warranted to explore the full potentials of anti TNF agents therapy in this common disorder.

**Disclosure:** The authors have declared no conflicts of interest.

**636. TRANSDERMAL BUPRENORPHINE IN CLINICAL DAILY PRACTICE: EFFECTIVENESS AND TOLERABILITY IN PATIENTS SUFFERING FROM CHRONIC MUSCULOSKELETAL PAIN**

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**Background:** Buprenorphine, a potent opioid analgesic, has been available in parenteral, oral and sublingual formulations. Recently, the buprenorphine transdermal patches (TDS) were introduced for the treatment of chronic cancer and noncancer pain.

**Objective:** This study investigated the short-term effectiveness and tolerability of buprenorphine TDS for the relief of chronic musculoskeletal pain in routine clinical practice.

**Methods:** This was a retrospective, observational, 1-month follow-up assessment of patients who were beginning buprenorphine TDS treatment for moderate to severe musculoskeletal pain that had not responded to analgesic therapy up to WHO step II opioids. Patches were to be changed every week. Patients’ baseline scores before and 1-month after the treatment were recorded using a developed questionnaire. Pain relief was assessed using numeric VAS, and quality of life was assessed using the health assessment questionnaire II, psychological assessment were also carried out for sleep, depression as well as anxiety. Tolerability was determined based on adverse events recorded during the follow-up period.

**Results:** The work included 84 patients, most of whom were outpatients. 64 (75%) of the cohort were women. The mean (SD) age was 65.7 (11.8) years. Regarding the cause of pain, 45.2% (38 patients) had chronic LBP, twenty (23.8%) patients had OA, 17 (20.2%) patients had osteoparotic pains, whereas 9 patients had other chronic pain. 64 patients (77.7%) suffered from an initial pain, and there was a significant increase in the proportion of patients reporting very good or good pain relief as evidenced by the improvement in the pain score (p < 0.05). Quality of life also improved, baseline HAQ mean (SD) was 2.8 ± 0.46 score, and after 1-month it became 1.7 ± 0.31 (p < 0.01). Also there was significant improvement in the quality of sleep score (p < 0.01). 26 patients (40.6%) of the 64 patients experienced adverse events. The most common adverse events were nausea (15.4%), vomiting (11.5%), and constipation (11.5%); the most common local adverse events were pruritus (7.7%), dermatitis (7.7%), and pruritus (3.8%). In 16/26 (61.5%), these side effects were managed medically and the patients continued their treatment course. More than half the patients (53.1%) asked to continue treatment with buprenorphine TDS.

**Conclusions:** Buprenorphine TDS achieved a very good analgesic effect and was effective as well as tolerated overall. It may prove particularly useful in patients who have experienced side effects taking oral analgesic preparations, as well as in those who are taking extensive co-medications.

**Disclosure:** The authors have declared no conflicts of interest.
637. THE DESIGN AND DEVELOPMENT OF A VALIDATED, REPRODUCIBLE SCORING SYSTEM FOR PATELLAR TENDINOPATHY USING POWER DOPPLER ULTRASONOGRAPHY

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Background: Patellar tendinopathy (PT) is a significant cause of pain and disability in athletes. PT can be a significant factor in prematurely ending professional athletes’ careers. The ultrasound appearances are well described. The presence and severity of neovascularisation is a potential prognostic tool in determining the severity of PT. Currently no validated scoring system exists for neovascularisation using power Doppler ultrasonography (PDUSS). The development of a validated and reproducible scoring system would be an invaluable research tool. A score that correlates with clinical severity will allow more targeted treatment strategies and a reduction in the time to return to painfree sporting activity.

The primary objective was to propose a validated scoring system to quantify neovascularisation in athletes with PT using PDUSS. Secondary objectives were to identify any correlation between:
1. The severity of neovascularisation and the VISA score.
2. The severity of neovascularisation and the area of tendinopathy.
3. The area of tendinopathy and the VISA score.

Methods: Approval was granted from the institutional clinical effectiveness and audit committee. 6 athletes with a clinical diagnosis of PT were recruited prospectively from the sports medicine clinic. At initial consultation athletes filled out the VISA questionnaire. Patients were then subject to ultrasonography (gray scale and PDUSS). A grading system was devised on a 0–3 scale to quantify neovascularisation on ultrasonography. Standardised sonographic images were taken and stored in both axial and sagittal views. This enabled the evaluation of inter and intra observer reproducibility of the scoring system. Pearson’s correlation coefficient, linear regression and the t test was used in the statistical analysis.

Results: The proposed scoring system demonstrated excellent inter (r > 0.89, p = 0.36) and intra (r = 1) observer reproducibility thus validating the method used. There was a strong negative correlation seen between neovascularisation and the VISA score (r = –0.63) demonstrating clinical relevance. There was poor correlation between the area of tendinopathy and neovascularisation (r = 0.69). There was a strong negative correlation seen between the area of tendinopathy and the VISA score (r = –0.98).

Conclusions: We propose the first validated scoring system for quantifying neovascularisation in athletes with PT using PDUSS. This new ultrasound severity index (OPTUS - Oxford Patellar Tendinopathy Ultrasound Score) has clear clinical relevance demonstrated by the strong correlation with the VISA score. This should be used as a measure of severity in future longitudinal studies to assess clinical outcome. If successfully proven to be a prognostic marker, it could lead to more targeted management strategies and a reduction in morbidity seen in elite athletes.

Disclosure: The authors have declared no conflicts of interest.

638. GUIDELINES FOR REFERRENS ON THE RATIONAL USE OF LIMITED EMG SERVICE IN A DISTRICT GENERAL HOSPITAL

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Background: Carpal Tunnel Syndrome (CTS) is the most common entrapment neuropathy with electrophysiologically confirmed CTS being estimated at 3% in women and 2% in men, with the peak prevalence in women aged over 55(1); it has lately gained notice as one of the more commonly reported occupational illnesses(1).

Methods: A systematic review was performed using Medline, Embase, CINAHL, AEMED and the Cochrane Library. All interventional and observational studies were included and review articles were analysed for further sources. Only studies reporting the outcome of at least one injection for Achilles tendinopathy were included.

RESULTS:

Since 1995 we have provided a limited electromyography (EMG) service for the local population. The waiting time for this investigation grew from 6 weeks in 1995 to more than 6 months in 2002. The most likely reasons for this are increased awareness of the condition among the public and GPs, and some Orthopaedic Surgeons are hesitant to operate without EMG confirmation.

Aim
EMG referrals for suspected CTS between September 2002 and September 2003 were retrospectively analysed with a view to producing Guidelines for the rational use of the service by referrers.

Methods:
The following data was obtained from the hospital medical records:

- Patient demographics, referrers, contributing factors, presenting complaints, clinical findings, EMG results, treatment given and the response to treatment.

Results:
Of 152 referrals for suspected CTS, 30% were males and 70% females. 50% were aged 50–75, 37% aged 25–50 and 13% were >75 yrs.

Clinical presentation: 25% had symptoms only, 59% had symptoms and sensory signs, 5% had symptoms and motor signs; there was no documentation in the other 11%.

Contributing factors: 7.3% had hypothyroidism, 6.6% had diabetes, 15.1% had osteoarthrit16.4% were obese, 2.6% had rheumatoid arthritis and 2.6% were post-traumatic.

Conclusions: Most EMG referrals came from GPs (41.4%) and Orthopaedic surgeons (40.1%).

24.3% EMGs were normal and 38.2% mild; these patients (62.5%) could have been managed conservatively without the need for EMG.

16/61(51.5%) patients responded well to the use of splints.

We produced the following evidence-based guidelines for the referrers to use in patients suspected of CTS and have passed these guidelines on to our referrers and hope to audit the referrals next year.

Disclosure: The authors have declared no conflicts of interest.

Reference
A population-based prospective study recruited subjects aged 25–65 years from 3 general practices in North West England. Pain status and PA levels were ascertained at baseline and 32 months later using a postal survey. PA was measured using 3 questions: “in comparison with others your own age, do you think your PA is ‘the same’ (referent group), ‘more-much more’ or ‘less-much less’”, measured using 3 questions: “in comparison with others your own age, do you think your PA is ‘the same’ (referent group), ‘more-much more’ or ‘less-much less’”, and “during the past month on average how many days per week have you taken exercise that has i) lasted at least 20 minutes? and ii) made you sweat? ‘4–7’ and ‘during the past month on average how many days per week have you taken exercise that has i) lasted at least 20 minutes? and ii) made you sweat?’ ‘4–7’ (referent), ‘‘1–3’ or ‘none’”. Baseline data on potential confounding factors, including psychosocial status, demographic and lifestyle factors, was also collected. Multinomial logistic regression models were used to assess the relationship between baseline CWP and each of the PA questions at follow-up, adjusted for age and gender. Results: Are presented as relative risk ratios (RRR) with 95% confidence intervals (95% CI).

Results: Out of 3241 eligible subjects, 2499 (77%) participated at both timepoints, of which 2418 provided complete pain and PA information. CWP was reported by 18% (n = 429) of participants at baseline, these subjects were more likely to be female (p = 0.02) and older (p = 0.01) than those free of CWP. Compared to subjects who were free of CWP at baseline, those with CWP had an increased risk of reported “more-much more” PA at follow-up (RRR = 3.1; 95% CI: 2.4–4.1). This relationship remained after adjustment for potential confounders and was not fully explained by baseline levels of PA (RRR = 1.9; 95% CI: 1.4–2.5). However, there was no relationship observed between baseline CWP status and subjects who reported “none” compared to “4–7” for the average number of days per week participated in exercise at follow-up that i) lasted at least 20 minutes (RRR = 1.3; 95% CI: 0.9–1.7) or ii) caused sweating (RRR = 1.01; 95% CI: 0.7–1.5).

Conclusions: The current study demonstrates that low self-reported levels of PA are a consequence of having CWP. Objective measurements of PA, in future studies, will determine whether such changes could account for increased mortality.

Disclosure: The authors have declared no conflicts of interest.

640. THE IMPACT OF CHRONIC WIDESPREAD PAIN ON PHYSICAL ACTIVITY LEVELS: RESULTS FROM THE EPIFUND STUDY

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Background: Chronic widespread pain (CWP) is associated with an increased risk of mortality, primarily from cancer and cardiovascular deaths. Several mechanisms may explain this relationship; one such mechanism is that CWP is associated with low levels of physical activity (PA), which over time are associated with an increased risk of mortality. The aim of this study was to test the hypothesis that CWP would predict low levels of PA.

Methods: A population-based prospective study recruited subjects aged 25–65 years from 3 general practices in North West England. Pain status and PA levels were ascertained at baseline and 32 months later using a postal survey. PA was measured using 3 questions: “in comparison with others your own age, do you think your PA is ‘the same’ (referent group), ‘more-much more’ or ‘less-much less’”, and “during the past month on average how many days per week have you taken exercise that has i) lasted at least 20 minutes? and ii) made you sweat?” ‘4–7’ (referent), ‘‘1–3’ or ‘none’”. Baseline data on potential confounding factors, including psychosocial status, demographic and lifestyle factors, was also collected. Multinomial logistic regression models were used to assess the relationship between baseline CWP and each of the PA questions at follow-up, adjusted for age and gender. Results: Are presented as relative risk ratios (RRR) with 95% confidence intervals (95% CI).

Results: Out of 3241 eligible subjects, 2499 (77%) participated at both timepoints, of which 2418 provided complete pain and PA information. CWP was reported by 18% (n = 429) of participants at baseline, these subjects were more likely to be female (p = 0.02) and older (p = 0.01) than those free of CWP. Compared to subjects who were free of CWP at baseline, those with CWP had an increased risk of reported “more-much more” PA at follow-up (RRR = 3.1; 95% CI: 2.4–4.1). This relationship remained after adjustment for potential confounders and was not fully explained by baseline levels of PA (RRR = 1.9; 95% CI: 1.4–2.5). However, there was no relationship observed between baseline CWP status and subjects who reported “none” compared to “4–7” for the average number of days per week participated in exercise at follow-up that i) lasted at least 20 minutes (RRR = 1.3; 95% CI: 0.9–1.7) or ii) caused sweating (RRR = 1.01; 95% CI: 0.7–1.5).

Conclusions: The current study demonstrates that low self-reported levels of PA are a consequence of having CWP. Objective measurements of PA, in future studies, will determine whether such changes could account for increased mortality.

Disclosure: The authors have declared no conflicts of interest.

641. BURDEN OF JOINT HYPERMOBILITY IN ADULT RHEUMATOLOGY CLINIC

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2Physiotherapy, Queen Elizabeth Hospital, Gateshead, United Kingdom

Background: Joint hypermobility is commonly diagnosed in children with musculo-skeletal (MSK) complaints. It is established that joint hypermobility significantly contributes to MSK complaints in adult rheumatological practice as well. About 5% of the Caucasian population are thought to have hypermobility and many have either limb-specific or widespread musculoskeletal pain. We have assessed the prevalence of benign joint hypermobility syndrome (BJHS) in our adult rheumatology clinics.

Methods: We identified all patients in Gateshead who attended one author’s (VS) new patient clinic for one month. We reviewed their case-notes to confirm the diagnosis using standard criteria for the confirmation of BJHS, including Beighton score, large and small joint range of movement, spinal movement and other features such as skin striae where relevant. We recorded any suspicion of hypermobility in the referral letter together with reasons for referral.

Results: We identified 67 patients who attended the month of February 2007. Inflammatory arthritis was diagnosed in 19 and the remaining 48 patients were found to have non-inflammatory MSK diseases. The break down of diagnoses is given in the Table, which confirms a diagnosis of BJHS in 7 patients. Several diagnoses were co-existent with BJHS. The referral letter only mentioned hypermobility in 2 cases and in 5 cases patients with BJHS had been labelled as having a chronic pain syndrome.

Conclusions: We have shown that BJHS is present in 15% patients with non-inflammatory MSK diseases, and in 10% of new adult rheumatology referrals overall. There may be a lack of awareness among primary care practitioners as hypermobility was only rarely mentioned in the GP referral letter. Many patients with BJHS had been diagnosed as having chronic pain syndromes, fibromyalgia, inflammatory arthritis etc. and this may be associated with poorer outcome due to misdiagnosis. Greater recognition of the presentation and management of BJHS is needed across the spectrum of primary and secondary care.

Disclosure: The authors have declared no conflicts of interest.

Breakdown of diagnoses of non-inflammatory MSK diseases

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoarthritis</td>
<td>20</td>
</tr>
<tr>
<td>Spondylosis</td>
<td>14</td>
</tr>
<tr>
<td>Benign Joint Hypermobility Syndrome</td>
<td>7</td>
</tr>
<tr>
<td>Fibromyalgia/Chronic pain/Depression</td>
<td>2</td>
</tr>
<tr>
<td>Osteoporosis</td>
<td>2</td>
</tr>
<tr>
<td>Carpal Tunnel Syndrome</td>
<td>3</td>
</tr>
<tr>
<td>Chest pain/costochondritis</td>
<td>3</td>
</tr>
<tr>
<td>Regional/limb pain syndrome</td>
<td>3</td>
</tr>
<tr>
<td>Crystal arthritis</td>
<td>6</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>6</td>
</tr>
</tbody>
</table>

More than one diagnoses may co-exist in a patient.

642. THE PREVALENCE OF “UNEXPLAINED” CHRONIC WIDESPREAD PAIN IN THE GENERAL POPULATION: RESULTS FROM THE GENERAL PRACTICE SYMPTOMS STUDY

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3Aberdeen Pain Research Collaboration (Epidemiology) Group, Aberdeen University, Aberdeen, United Kingdom and
4Department of Psychiatry, University of Manchester, Manchester, United Kingdom

Background: Chronic widespread pain (CWP) is common in the general population and is considered to be largely unexplained by organic causes. Whether this is true is unclear.

Aim: To determine the prevalence of CWP that is unexplained by organic causes in the general population.

Methods: We conducted a population based postal survey in two general practices in the North West of England. The questionnaire asked about any pain or stiffness that had lasted over three months. Participants had experienced for one day or longer in the past month. Additional questions asked about pain duration. Based upon their questionnaire responses those respondents satisfying the American College of Rheumatology criteria for CWP were identified. We sought consent to review medical records held at the general practice. Two doctors independently rated the medical records of all those with CWP for the 12 months prior to and after the date of questionnaire completion. We identified those who had consulted and, if so, whether an organic cause was recorded that could explain the presence of CWP at the time of questionnaire completion. Respondents were classified into “organic” (symptoms were likely to have an organic cause) and “unexplained” (no evidence of organic cause) CWP.

Results: 2985 people were mailed a questionnaire and 1601 responded (response rate 64.3%) after removing from the denominator the 496 who had moved or died before the study had started. A total of 1444 provided pain data and 159 (11.1%) reported CWP. When compared to those symptom free, respondents with CWP were more likely to be female (57.1% vs 62.3% respectively, p = 0.005) and older (median age 46.6 (95% CI 45.5, 48.0) vs 49.8 (95% CI 46.3, 53.0), p = 0.001). 99 (62.2%) respondents with CWP gave consent for the study team to review their medical notes. 75 of the 99 (75.8%) had consulted their GP during the 24 month observation period of whom 18 (24.0%) had an “organic” cause for their pain, whereas the majority (N = 57 (76%)) had “unexplained” CWP. The most common “organic” causes (1016) were rheumatic disorders including RA and SLE. Raters agreed on 89.0% of cases but after discussion the agreement rate reached 100%. Using these figures the adjusted population prevalence of “unexplained” CWP was estimated to be 8.8%.

Conclusions: Detecting CWP in population samples by questionnaire identifies a predominantly idiopathic group although one fifth have an organic cause for the pain.

Disclosure: The authors have declared no conflicts of interest.
Of ninety-three dancers (69% response rate), 50 were still with the Royal Ballet Company, 43 elsewhere, with 55 females and 38 males. The prevalence of JHS was 33% for females and 32% for males; figures in keeping with those found at the Royal Ballet School, London, United Kingdom.

**Background:** An increased prevalence of musculoskeletal disease is recognised in diabetes and is a common source of disability. Its relationship to complications of diabetes is poorly understood and its correlation with diabetic control is unknown. Furthermore, there is little data on the differences between types 1 and 2 diabetes with regard to musculoskeletal disease.

**Methods:** We identified a group of 45 out patients with established type 1 diabetes and matched them for both gender and duration of disease with a group of 51 type 2 out patient diabetics. We examined them for the presence of locomotor disease using the GALS screening test followed by a more detailed regional examination (REMS) of the upper limbs. The presence of all abnormalities were recorded and the specific nature of upper limb abnormalities was carefully defined. The average HbA1c over the previous year was noted as was the presence of diabetic retinopathy or neuropathy. The mean HAQ was recorded and correlations between the presence of locomotor disease and HbA1c, other diabetic complications and HAQ were calculated.

**Results:** 63% of our patients were male and the group had a median age of 55 years with median duration of diabetes of 13 years. GALS revealed evidence of locomotor disease in 75% with the upper limb the commonest site for abnormalities. Shoulder pain was the commonest finding (21%) followed by wrist and hand abnormalities (18%) and thoracic (15%).

**Conclusions:** Upper limb locomotor abnormalities are very common in diabetes and associate with both worse diabetic control and other diabetic complications. Type 1 diabetics have a lower prevalence and less resulting disability than type 2 diabetics. Management and prevention are needed for gender, duration of disease and diabetic control. Assessment of upper limb locomotor disease in all diabetics should include an estimate of diabetic control and the presence of other complications of the disease.

**Disclosure:** The authors have declared no conflicts of interest.

**Table 1. Comparison of vitamin D levels between groups.**

<table>
<thead>
<tr>
<th>N</th>
<th>Male</th>
<th>Female</th>
<th><em>p</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>25 Vit D</td>
<td>35</td>
<td>177</td>
<td>0.05 group 1 vs. group 3.</td>
</tr>
<tr>
<td>Gen Rheum</td>
<td>55%</td>
<td>14%</td>
<td>0.01</td>
</tr>
<tr>
<td>Inf Arth</td>
<td>32%</td>
<td>12%</td>
<td>0.01</td>
</tr>
<tr>
<td>Pain</td>
<td>32%</td>
<td>12%</td>
<td>0.01</td>
</tr>
</tbody>
</table>

**Table 2.**

<table>
<thead>
<tr>
<th>Condition</th>
<th>JHS</th>
<th>Non JHS</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>At least 1 tendon injury</td>
<td>50%</td>
<td>21%</td>
</tr>
<tr>
<td>Injuries prevented for &gt;6 wks</td>
<td>61%</td>
<td>32%</td>
<td>3.3 (1.08-10.3)</td>
</tr>
<tr>
<td>More than 1 prolonged period of time off</td>
<td>38%</td>
<td>25%</td>
<td>3.5 (0.7-17.8)</td>
</tr>
<tr>
<td>Male</td>
<td>At least 1 tendon injury</td>
<td>42%</td>
<td>8%</td>
</tr>
<tr>
<td>Injuries prevented for &gt;6 wks</td>
<td>83%</td>
<td>35%</td>
<td>9.4 (1.7-52.7)</td>
</tr>
<tr>
<td>More than 1 prolonged period of time off</td>
<td>38%</td>
<td>12%</td>
<td>6.7 (1.3-33.6)</td>
</tr>
</tbody>
</table>

**Acknowledgement:** The authors have declared no conflicts of interest.
was 5.2 (1.6)). Patients with FM had significantly higher HAQ (P < 0.001). They also had a greater number of disturbed nights. We found significant differences comparing plasma ET-1 levels in FM patients with those in healthy controls. Plasma ET-1 levels in FM patients were 22.2 (20.0) pg/ml vs controls 8.9 (5.6) pg/ml (P < 0.01). It is not established correlation between plasma ET-1 levels and age of patients with FM, disease duration or number of TP, body mass index.

Conclusions: We found significant increased ET-1 levels in patients with FM when comparing the healthy controls. Increased plasma levels of one of the most potent physiological vasoconstrictors ET-1 could explain some of the above-mentioned symptoms of vascular disorders occurring in patients with FM.

Disclosure: The authors have declared no conflicts of interest.

647. FUNCTIONING OF THE GROWTH HORMONE AXIS AND CHRONIC WIDESPREAD PAIN: RESULTS FROM THE EUROPEAN MALE AGING STUDY (EMAS)
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Background: Stress-related alterations in endocrine function are associated with chronic widespread pain (CWP). We have demonstrated changes to HPA axis function in population-based samples. Amongst clinic patients with fibromyalgia peripheral neuropathy and multiple symptom reporting with the results expressed as odds ratios (OR) and 95% confidence intervals (CI).

Methods: The European Male Ageing Study (EMAS) is an 8 centre population-based study of aged, middle aged and elderly men. Men aged 40–79 years were recruited from population registers and invited to participate by postal questionnaire. The questionnaire asked about the presence and duration of musculoskeletal pain. Based on subjects reports those with CWP were identified. The questionnaire was used to determine whether a similar relationship was apparent in a population sample of subjects with CWP.

Results: A total of 3,369 men, mean age 60 (SD = 11) years provided data for this analysis. Of those 278 (8.7%) reported CWP. IGF-1 levels were similar among those with and without CWP: 133.5 mg/L vs 129.1 mg/L respectively. This was true also for IGFBP-1 (0.28 vs 0.27) and IGFBP-3 (4.43 vs 4.34). A higher body mass index, lower levels of physical activity, and a higher depression score were significantly associated with CWP. In regression analysis, after adjusting for centre, IGF1 levels (per unit increase in IGF1 level, OR = 1.9, 95% CI (1.2–3.2) and anxiety (OR = 2.4, 95% CI (1.5–3.9)). The prevalence of CF was 11.2% (N = 79), while 2.4% (N = 17) reportedOFP and CRP were also determined. Pain was categorised as widespread if reported in more than 12 sites. Serum 25 (OH) Vitamin D was measured by radioimmunoassay and concentrations of ≤60 nmol/L was considered sub-optimum. PTH and CRP were measured on automated analysers (Roche Elecsys 2010 and P module respectively, Roche diagnostics). The patients were divided into 2 groups based on their serum 25 (OH) Vitamin D concentrations. Chi-square tests were used for the comparison of the patients.

Results: Seventy five patients were vitamin D insufficient (Group A) (25 (OH) vitamin D mean 31.7 nmol/L, [SD 11.7]). Twenty five patients (Group B) had optimum serum 25 (OH) vitamin D concentrations (mean 69.8 nmol/L, [SD 11]). In Group A (11 males and 64 females), median age 34.1 years (22–83), 30 were Caucasian, 19 Afro Caribbean and 26 Asian in origin. In Group B (4 males and 21 females), median age 54.7 (36–67) years, 17 were Caucasians, 3 Afro Caribbean and 5 Asians in origin. Sixty seven patients in Group A (89.3%) had widespread body pain compared to 14 (58%) in Group B (p = 0.001). The CRP levels did not differ significantly between the two groups (P = 0.38), CRP was elevated in 7 (28%) patients in Group B and 19 (25.3%) patients in Group A (p = 0.38), PTH was elevated (>55 ng/L) in 21(28%), median 66.9 [12–364] in Group A and 3 (12%), median 38.7 [17–107] in Group B (P = 0.003).

Conclusion: Widespread non-specific body pain may be associated with vitamin D deficiency in non-inflammatory rheumatic disease. Intervention studies are required to see if vitamin D supplements may relieve the symptoms in this population.

Disclosure: The authors have declared no conflicts of interest.

649. LOW SERUM VITAMIN D CONCENTRATION IS ASSOCIATED WITH WIDESPREAD BODY PAIN IN PATIENTS WITH NON-INFLAMMATORY RHEMATOLOGIC DISORDERS
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Background: It is well-known that vitamin D deficiency/insufficiency leads to musculoskeletal abnormalities. However the association between hypovitaminosis D, chronic widespread body pain and inflammation remains unclear. Patients with vitamin D deficiency may be mis-diagnosed with fibromyalgia or somatization syndromes.

Methods: We retrospectively examined the medical records of patients attending the rheumatology clinic over a 12-month period. Patients were excluded if they had inflammatory rheumatic syndromes. A total of 100 patients were studied. Data including age, gender, clinical and diagnosis were recorded. Pain distribution was assessed on all subjects. Serum 25(OH) vitamin D, parathyroid hormone (PTH) and CRP were also determined. Pain was categorised as widespread if reported in more than 12 sites. Serum 25 (OH) Vitamin D was measured by radioimmunoassay and concentrations of ≤60 nmol/L was considered sub-optimum. PTH and CRP were measured on automated analysers (Roche Elecsys 2010 and P module respectively, Roche diagnostics). The patients were divided into 2 groups based on their serum 25 (OH) vitamin D concentrations. Chi-square tests were used for the comparison of the groups.

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Conclusion: Widespread non-specific body pain may be associated with vitamin D deficiency in non-inflammatory rheumatic disease. Intervention studies are required to see if vitamin D supplements may relieve the symptoms in this population.

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