was re-calibrated by technicians. Because the sham device had no adjustable pods on the soles, technicians pretended to make appropriate changes. The primary endpoint was knee pain at the end of treatment in the knee with more pain at screening, assessed with the WOMAC pain subscale. Secondary outcomes were WOMAC physical function and stiffness subscales. All subscales were standardised to range from 0 to 10. These outcomes were analysed using linear models adjusted for baseline values and the two stratification factors uni- vs. bilateral, and medial vs. lateral osteoarthritis at randomization, using multiple imputation.

Results: Of 697 patients assessed for eligibility, 220 were randomised: 111 to the experimental footwear and 109 to the sham device. The mean age was 65.2 years (SD 9.2) and the mean body mass index was 28.0 (SD 4.6). Overall, 47.3% were women and 88.2% had medial knee OA in the index knee. The mean WOMAC pain score at baseline was 4.1 (SD 1.9). Seven patients in the experimental group and 13 in the sham group dropped out. At the end of the trial, the adjusted mean difference for WOMAC pain was 1.34 (95% CI: 0.92 to 1.77) in favour of the experimental footwear. The adjusted mean difference was 1.42 (0.93 to 1.91) for WOMAC stiffness and 1.12 (0.73 to 1.50) for WOMAC physical function (figure 1). Three serious adverse events occurred in the experimental group, compared with 9 in the sham group; none were treatment-related. Thirty adverse events occurred in the experimental group, compared with 36 in the sham group; 18 and 17 of these, respectively, were possibly treatment-related.

Conclusions: This trial suggests that the new biomechanical footwear system is both efficacious and safe in relieving knee pain in patients with knee OA.

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Fracture risk and consequences

OP0062 OSTEOPOROTIC HIP FRACTURES IN MEN: A RISING CONCERN

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Background: Osteoporosis screening and treatment is often exclusively targeted at post-menopausal women. The US Preventive Task Force guidelines recommend bone density screening in women starting at age 65, but do not make any similar recommendation for men, even though men have higher mortality than women after a hip fracture.¹ Recent improvements in health care has led to increasing lifespan of men in US. As more men enter the seventh and eighth decades of their life, they are at more risk for developing osteoporosis and osteoporotic hip fractures.

Objectives: To study the number and prevalence of hospitalizations for osteoporotic hip fractures in the men and women aged 50 years and up in the US over 23 years (1993–2015).

Methods: The National Inpatient Sample (NIS) is a stratified random sample of all US community hospitals and is the only US national hospital database with information on all patients, regardless of payer, including persons covered by Medicare, Medicaid, private insurance, and the uninsured. We examined all inpatient hospitalizations in NIS from 1993 to 2015 with a primary diagnosis of non-traumatic (osteoporotic) hip fractures in individuals 50 years and older. Patients were excluded if there was any evidence of major trauma, open fractures, or primary or secondary femoral tumours. US population estimates and projections for the resident US population were obtained from the US Census Bureau. All prevalence rates were expressed per 1 000 000 of the US population.

Results: From 1993 to 2015, we studied 6.3 million osteoporotic hip fracture hospitalizations in 1.99 billion person-years of observation in individuals who were 50 years or older. Of these, 74% occurred in women. Hip fracture hospitalizations in women decreased from 2 09 052 in 1993 (prevalence 562 per 1 000 000 person-years) to 2 01 435 in 2015 (340 per 1 000 000 person-years), even as the population of 50 years and older women increased from 37 million in 1993 to 59 million in 2015 (59% increase in population), perhaps reflecting increasing awareness, screening and treatment for osteoporosis in elderly women. However, in men aged 50 years and older, osteoporotic hip fracture hospitalizations increased from 64 339 in 1993 to 83 885 in 2015, even as the prevalence decreased from 218 per 1 000 000 person-years in 1993 to 162 per 1 000 000 person-years in 2015. The 30% increase in the absolute number of hip fracture hospitalizations, despite decreasing prevalence, is coincident with the 75% rise in the number of the 50 years and older men population, from 29.6 million in 1993 to 51.7 million in 2015.

Abstract OP0062 – Figure 1. Hip fracture hospitalisation in the US

Conclusions: Despite an overall decrease in prevalence, the absolute number of osteoporotic hip fracture hospitalizations increased in 50 years and older men. More attention needs to be paid to prevention of osteoporotic hip fractures in this cohort.

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OP0063 PERIPHERAL ARTERIAL DISEASE AND RISK OF OSTEOPOROTIC HIP FRACTURE: A SYSTEMATIC REVIEW AND META-ANALYSIS OF COHORT STUDIES

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Background: Previous studies have demonstrated that patients with peripheral arterial disease (PAD) had lower bone mineral density, particularly in the femur, compared with general population. Therefore, it is possible that patients with PAD may have a higher risk of osteoporotic hip fracture.

Objectives: To compare the risk of developing hip fracture between patients with PAD and individuals without PAD.

Methods: A systematic literature search was conducted using EMBASE and MEDLINE database from inception to November 2017 to identify all cohort studies that investigated the risk of incident hip fracture among patients with PAD compared with individuals without PAD. The systematic literature review was independently conducted by the first two investigators using the search strategy that included the terms for 'peripheral arterial disease' and 'hip fracture'. Eligible studies must be cohort studies (either prospective or retrospective) that reported the risk of incident hip fracture among patients with PAD. Comparators must be individuals without PAD. Eligible studies must provide the effect estimates (relative risks (RR) or hazard ratios (HR)) with 95% confidence intervals (CI) for the calculation of pooled effect estimates. Adjusted point estimates from each study were combined together using the random-effect, generic inverse variance method as described by DerSimonian and Laird.

Results: Of 8464 retrieved articles, 6 cohort studies (3 prospective cohort studies and 3 retrospective cohort studies) involving 15 895 patients with PAD and 2 33 835 comparators without PAD met the eligibility criteria and were included in the meta-analysis. We found a significantly increased risk of incident hip fracture among patients with PAD compared with individuals without PAD with the pooled RR of 1.64 (95% CI: 1.17 to 2.29). The statistical heterogeneity was high with an I^2 of 80%. Subgroup analysis by study design showed a significantly increased risk of incident hip fracture among patients with PAD for both prospective studies (pooled RR 1.60; 95% CI: 1.12 to 2.28; I^2 0%) and retrospective studies (pooled RR 1.72; 95% CI: 1.07 to 2.77; I^2 92%) as shown in figure 1.

Conclusions: In summary, this study demonstrated a significantly increased risk of incident hip fracture among patients with PAD compared with individuals without PAD.

Disclosure of Interest: None declared

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OP0064

GENERAL BONE LOSS IN PATIENTS WITH EROSIVE AND NON-EROSIVE HAND OSTEOARTHRITIS DURING THREE YEARS

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Background: Hand osteoarthritis (OA) and its more severe subset erosive hand OA are common causes of pain and morbidity. Some metabolic factors were suggested to be implicated in erosive disease. Few studies investigated differences in systemic bone loss between erosive and non-erosive hand OA.

Objectives: To compare the change of bone mineral density (BMD) between patients with erosive and non-erosive hand OA in a longitudinal study after three years.

Methods: American College of Rheumatology (ACR) criteria were used to assess hand OA. Erosive hand OA was defined by at least one erosive interphalangeal joint. All patients underwent clinical assessments of joint swelling and radiographs of both hands. DEXA examination of lumbar spine, total femur and femur neck was performed at baseline and after three years. Metabolic risk factors (body mass index, hypertension, diabetes, dyslipidaemia) were collected.

Results: Altogether, 144 patients (15 male) with symptomatic nodal HOA were included in this study and followed between April 2012 and January 2018. Out of these patients, 82 had erosive disease after three years. The disease duration ($p < 0.01$) was significantly higher in patients with erosive compared with non-erosive disease.

Most patients took symptomatic slow acting drugs (SYSADOA) twice a year, non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics on demand.

Baseline population characteristics did not differ between both groups. Osteoporosis (T-score < -2.5 SD) was diagnosed in 12.5% (9/72) of patients with erosive hand OA and in 8.06% (5/57) of patients with non-erosive hand OA. Although BMD did not significantly differ between the groups (BMD of lumbar spine 1.05 g/cm² vs 1.13 g/cm², $p < 0.05$, total femur 0.90 g/cm² vs 0.97 g/cm², $p < 0.01$ and femur neck 0.86 g/cm² vs 0.91, $p < 0.05$), T-scores of lumbar spine (-0.96 vs -0.41 SD, $p < 0.05$), total femur (-0.69 vs -0.33 SD, $p < 0.05$) and femur neck (-1.14 vs -0.88 SD, $p < 0.05$) were significantly lower in patients with erosive compared with non-erosive disease.

After three years, the decrease in T-score of lumbar spine was significantly higher in erosive hand OA compared to non-erosive disease (-3.66% vs 15.52% , $p < 0.01$), also the decrease of T-score in total femur was significantly higher in erosive hand OA compared to non-erosive disease (-4.29% vs 7.68% , $p < 0.05$).

The decrease of bone mineral density was also significantly higher in patients with erosive hand OA after three years. The decrease of BMD of lumbar spine was significantly higher in erosive hand OA after three years compared to non-erosive disease (-3.30% vs 1.06% , $p < 0.05$), the decrease of BMD in femur neck was significantly higher in erosive hand OA after three years compared to non-erosive disease (-3.2% vs 0.02% , $p < 0.05$), the decrease of BMD total femur neck was significantly higher in erosive hand OA after three years compared to non-erosive disease (-1.58% vs 0.82% , $p < 0.05$).

Conclusions: These results suggest that patients with erosive hand OA are at higher risk for development of deep general bone loss.

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OP0065

OSTEOPOROSIS AND VERTEBRAL FRACTURES ARE ASSOCIATED WITH DISEASE ACTIVITY AND RADIOGRAPHIC DAMAGE IN PATIENTS WITH AXIAL SPONDYLOARTHRITIS

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Background: Osteoporosis (OP) and vertebral fractures (VF) are common comorbidities of axial Spondyloarthritis (axSpA) with deleterious effects for the physical function of the patients.

Objectives: To evaluate the relationship between disease activity and radiographic damage and bone mineral density (BMD), 25 (OH) vitamin D levels and VF in patients with axSpA (ASAS Criteria).

Methods: Cross-sectional study. Activity variables: Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and Ankylosing Spondylitis Disease Activity Score (ASDAS); ESR and CRP. Vitamin D insufficiency if < 30 ng/mL. Lumbar Spine (LS) and femoral neck (FN) Dual X-ray absorptiometry (DXA) performed. Evaluation of VF with semiquantitative method (Genant) in thoracolumbar X-rays. Bivariate analysis to evaluate the associations with the presence of OP and/or VF, then binary and multiple logistic regression models, by using SPSS (v23); p values < 0.05 considered significant.

Results: We studied 206 patients (62 women/144 men); 86% AS/14% nr-axSpA and associated peripheral involvement in 42%. Mean $\pm$ standard deviation (SD) values: age 52 ± 14 ; activity (BASDAI 3.6 ± 2.2 , ASDAS-CRP 2.2 ± 0.95 , ASDAS-ESR 2.5 ± 0.99 , CRP 4.97 ± 8.97 mg/L, ESR 18.2 ± 14 , 8 mm); physical function (BASFI 3.3 ± 2.7); radiographic damage: mSASSS total 20.46 ± 19.14 , lumbar 10.41 ± 9.89 and cervical 10.05 ± 10.78 ; 25 (OH) vitD 19.83 ± 9.25 ng/mL, 85.7% of the patients had insufficiency. Low LS BMD in 25.7% (z-score) and 28.9% (t-score) and low FN BMD in 45.2% (z) and 28.9% (t) of the patients. OP prevalence in LS 3.2% (z)/6.9% (t) and in FN 9.1% (z)/13.4% (t). Morphometric VF were identified in 34% of the patients.

Bivariate analysis: ESR, ASDAS-ESR, age, male sex, low 25 (OH) vitD levels and the mSASSS were associated with low FN BMD. Multivariate models confirmed the association between disease activity (ASDAS-ESR) [OR 3.32 (95% CI: 2.35 to 4.55); $p = 0.016$], 25(OH)D [OR 0.95 (95% CI: 0.86 to 0.98); $p = 0.029$] and low FN BMD (z score).

An association was confirmed between CRP [OR 2.34 (95% CI: 1.10 to 4.98); $p = 0.027$], radiographic damage [lumbar mSASSS OR 1.06 (95% CI: 1.03 to 1.10) $p = 0.001$, high LS BMD [OR 296 (95% CI: 5.07 to 12258); $p = 0.006$] and low FN BMD [OR 0.11 (95% CI: 0.03 to 0.12); $p = 0.000$] and the presence of VF.

Abstract OP0065 – Table 1. Differences between patients without or with VF

	Without VF	With VF	p value
CRP (mg/L)	5.10 $\pm$ 1.6	9.51 $\pm$ 2.1	$p = 0.003$
ESR (mm/h)	15.87 $\pm$ 4.8	23.12 $\pm$ 6.2	$p = 0.002$
25OHvitD (ng/mL)	20.80 $\pm$ 4.6	18.04 $\pm$ 3.7	$p = 0.049$
cervical mSASSS	8.02 $\pm$ 2.5	13.11 $\pm$ 4.8	$p = 0.002$
lumbar mSASSS	8.93 $\pm$ 3.7	12.36 $\pm$ 6.5	$p = 0.000$
total mSASSS	17.66 $\pm$ 7.3	27.13 $\pm$ 10.7	$p = 0.000$
LS BMD	1.090	1.191	$p = 0.002$
	± 0.09	± 0.13	
FN BMD	0.912	0.773	$p = 0.000$
	± 0.11	± 0.18	

Conclusions: In patients with axSpA, low FN BMD is associated with disease activity and vitamin D insufficiency and VF are associated with CRP and low hip bone mass. Furthermore, the presence of radiographic damage, even when 'falsely' increases LS BMD, is associated with the presence of fractures.

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