Methods: cross-sectional study included ambulatory 682 postmenopausal women aged 48 to 62 (median 56; 25%–75%: 52.0 / 60.0). Inclusion criteria were: confirmed postmenopausal status and Kellgren stage 2 or 3 OA of the knee and/or hip joints fulfilling ARA criteria. Cognitive impairment (CI) was verified by MMSE scale (Mini Mental State Examination). For all patients expected individual risk of premature death and Charlson index were calculated.

Results: Median Charlson comorbidity index in women with OA was 4 (3 / 4). None of the patient had a comorbidity index of 0. The most frequent comorbidities were chronic heart failure (364 women (53.4%) and type 2 diabetes mellitus (180 women, 26.4%).

Charlson index increase was associated with decline of cognitive function (see table 1) with incline of quantity and severity of CI cases.

Abstract AB0960 – Table 1

Charlson Index	n	Age (Me, 25%–75%)	MMSE value	
			(Me, 25%–75%)	Lower limit
1	11	48 (45–49)	28 (28–29)	28
2	102	59 (47–55)	28 (27–29)	24
3	202	54 (51–57)	27 (26–29)	22
4	200	57 (53–60)	26 (25–28)	20
5	119	60 (57–65)	26 (24–27)	21

Conclusions:

- Hip and knee joints OA in postmenopausal women is associated with polymorbidity.
- Polymorbidity in OA patients is associated with cognitive impairment.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.7219

AB0961

CARDIORESPIRATORY RESPONSE ACCORDING TO BODY WEIGHT SUPPORT AND GAIT VELOCITY VIA ANTI-GRAVITY TREADMILL AFTER BILATERAL TOTAL KNEE ARTHROPLASTY

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Background: Patients undergoing total knee arthroplasty (TKA) may benefit from early focused postoperative rehabilitation, and progressive weight-bearing activities, such as walking, are routinely recommended during rehabilitation to facilitate return to normal gait function. Not all patients are capable of full weight-bearing activity in the early postoperative period and assistive devices such as walkers, crutches, and canes, are routinely employed. The anti-gravity treadmill, consisting of a treadmill enclosed within an airtight chamber, applies air pressure to a patient's lower body to alter body weight support and can reduce the forces at the knee during weight bearing exercise. The anti-gravity treadmill could be a useful device for early postoperative rehabilitation of TKA, especially for those patients with reduced physical strength and cardiovascular fitness. However, so far, there have been no reported investigations of the physiologic cardiorespiratory responses via anti-gravity treadmill in patients following TKA.

Objectives: This study was conducted to investigate cardiorespiratory response according to body weight support and gait velocity elicited using an anti-gravity treadmill during walking and to find specific gait velocity and body weight support combinations early after bilateral TKA.

Methods: Twenty five patients who underwent a primary TKA were enrolled in this study. Subjects walked with 2.5 km/h and 3.5 km/h on an anti-gravity treadmill at 3 levels (50%, 75%, 100%) of body weight (BW). Each trial was performed for 2 min with at least 1 min rest between trials. For cardiorespiratory responses, oxygen consumption (VO_2), Heart rate, systolic (SBP) and diastolic blood pressure (DBP), respiratory exchange ratio (RER) and rate pulse product (RPP) were measured continuously with average values. The VO_2 , heart rate and RER were measured by using the K4b2 (Cosmed, Rome, Italy), which is a wireless cardiopulmonary diagnostic device, and the values of these exercise variables were defined as the averages of values recorded during the last 30 s of exercise. The RPP was calculated ((heart rate x SBP)/100). In addition, Borg's rating of perceived exertion scale (RPE) and visual analogue scale (VAS) of knee pain were recorded immediately after each condition.

Results: There were 20 females and 32 men, with the average age being 71.3 $\pm$ 5.4 years. In the two-way repeated measures ANOVA, VO_2 levels ($p < 0.01$), HR ($p < 0.01$), RPP ($p < 0.01$), RPE ($p < 0.01$), RER ($p < 0.01$) and VAS ($p < 0.01$) were significantly increased in proportion to 3 levels (50%, 75%, 100%) of BW. In the post-hoc analysis, all other conditions except comparison of RER values between 50% level of BW and 75% level of BW under a speed of 2.5 km/h and a speed of 3.5 km/h were statistically significant. Meanwhile, SBP ($p = 0.65$) and DBP ($p = 0.39$) were not influenced by difference of BW levels.

While walking with a speed of 3.5 km/h at same fraction of BW level, VO_2 ($p = 0.03$), RPE ($p < 0.01$) and RER ($p = 0.01$) values were statistically greater than 2.5 km/h. In the post-hoc analysis, all other conditions except comparison of RER values between a speed of 2.5 km/h and a speed of 3.5 km/h under 100% level of BW was statistically significant.

In addition, multiple linear regression analysis was performed to defining VO_2 as functions of gait speed and fraction of BW under each condition. Based on BW and gait velocity settings of the LBPP treadmill, the equations were $\text{VO}_2 = 1.46 v + 0.08 \text{ BW} + 3.13$ (adjusted $R^2 = 0.34$)

Conclusions: This study demonstrated that cardiorespiratory responses were variably computed by combination of weight support and gait velocity during anti-gravity treadmill walking, and these cardiorespiratory responses and knee pain were more significantly influenced by body weight support than gait velocity. These findings suggest that body weight support and gait speed should be considered for gait training program for cardiovascular fitness early after bilateral total knee arthroplasty.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.1216

AB0962

IRISIN LEVELS ARE ASSOCIATED WITH EXERCISE, PAIN AND FUNCTION IN PATIENTS WITH KNEE OSTEOARTHRITIS

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Background: Muscle strengthening and aerobic exercise have been shown to improve joint pain and function in patients with knee osteoarthritis (OA). Irisin is a hormone-like myokine synthesized by skeletal muscle and its secretion appears to be related to physical activity in healthy people.

Objectives: To determine the levels of irisin synovial fluid and plasma and evaluate their association with exercise level and pain and function in patients with symptomatic knee OA.

Methods: Cross-sectional study with systematic inclusion of 108 symptomatic primary knee osteoarthritis patients (VAS > 4) with ultrasound-confirmed joint effusion. Age, physical exercise, knee osteoarthritis symptoms duration and different anthropometric measurements were collected. Radiographic severity was evaluated according to Kellgren-Lawrence scale. Physical exercise was categorised as never, occasional (less than 150 min per week) or regular (more than 150 min per week). Pain and disability were assessed by the Lequesne algo-functional questionnaire. Irisin was measured by ELISA in synovial fluid and plasma. Summary of clinical data and laboratory parameters and their association with Lequesne scale were performed using non-parametric methods. Medians and Spearman correlation (r) were used for continuous measures, and Mann-Whitney test was applied to categorical variables. This study was approved by the local ethics committee.

Results: Plasma and synovial irisin levels were strongly related ($r = 0.7$). Plasma and joint irisin levels showed an inversely significant association with the level of exercise in patients with symptomatic knee OA: no exercise 763.3 ng/mL, occasional exercise 631.8 ng/mL and regular exercise 523 ng/mL ($p < 0.01$). Patients with severe pain and disability (Lequesne algo-functional score > 11) had higher plasma (791.5 vs 680.4 ng/mL, $p < 0.05$) and synovial (711.4 vs 468.7 ng/mL, $p < 0.05$) irisin levels compared to patients with less disability and pain. No relationship was found between irisin concentration in plasma or synovial fluid and radiographic severity.

Conclusions: Irisin levels were associated with pain and function in patients with knee osteoarthritis. Irisin levels were negatively associated with exercise level in this population.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.7421

AB0963

CALPROTECTIN AS A USEFUL MARKER OF INFLAMMATION IN KNEE OSTEOARTHRITIS

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Background: Low-grade synovial inflammation is known to be present in many patients with knee osteoarthritis and appears to have clinical and prognostic implications. Calprotectin seems to be more sensitive than CRP to detect minimal inflammatory activity in many inflammatory rheumatic diseases and could be a biomarker in osteoarthritis with inflammatory features.

Objectives: To determine the levels of synovial calprotectin in patients with knee osteoarthritis showing inflammatory traits and their relationship with clinical and ultrasonographic features and other proinflammatory markers.

Methods: Cross-sectional study with systematic inclusion of 108 symptomatic primary knee osteoarthritis patients (VAS > 4) with ultrasound-confirmed joint

effusion. Age, physical exercise, knee osteoarthritis symptoms duration and different anthropometric measurements were collected. Radiographic severity was evaluated according to Kellgren-Lawrence scale. Pain and disability were assessed by WOMAC-pain and WOMAC-function. Calprotectin, TNF- α , IL-6 and high-sensitivity C-reactive protein (hs-CRP) were measured by ELISA in synovial fluid. Summary of clinical data and laboratory parameters and their association with WOMAC scales were performed using non-parametric methods. Medians and Spearman correlation (r) were used for continuous measures, and Mann-Whitney test was applied to categorical variables. This study was approved by the local ethics committee.

Results: Median higher synovial calprotectin levels were associated with worse WOMAC pain (671.5 vs 431.8 ng/mL, $p<0.05$.) and function (713.4 vs 400.1 ng/mL, $p<0.05$.) scores than patients with inferior levels. Patients with moderate to severe synovial effusion (>8 mm on midline suprapatellar line) had higher calprotectin levels compared with those with mild effusion (626.1 vs 417.5 ng/mL, $p<0.05$). Synovial calprotectin levels showed moderate correlations with intraarticular TNF- α levels ($r=0.26$), hs-CRP ($r=0.27$) and a high correlation with synovial IL-6 levels ($r=0.53$).

Conclusions: Calprotectin showed association with inflammatory features as measured by ultrasound and inflammatory markers such as hs-CRP, TNF- α and IL-6, and was related to pain and function in patients with knee osteoarthritis with inflammatory features. Calprotectin appears to be a useful marker of inflammation and could be a useful marker for assessing response to treatments targeting inflammation.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.7444

AB0964 THE ROLE OF MTOR GENE EXPRESSION, APOPTOSIS AND INFLAMMATION IN OBESE PATIENTS WITH KNEE OSTEOARTHRITIS

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Background: Metabolic osteoarthritis (OA) has been identified in rheumatology as a specific phenotype due to the growing rates of obesity and other comorbidities, with meta-inflammation as the key factor in its pathogenesis. On the other hand, OA progression is associated with altered regulation of chondrocytes' metabolism, namely, with up-regulated expression of genes encoding m-TOR, apoptosis, cartilage degeneration and inflammation.

Objectives: To measure the expression levels of genes encoding mTOR, apoptosis (caspase-3), cartilage destruction (cathepsin K), and inflammation (TNF- α) in patients with knee OA (KOA) and obesity.

Methods: 50 female patients (45–65 y.o.) with Kellgren-Lawrence stage II-III KOA and obesity (BMI >30 kg/m²;) were randomised into 2 groups. Pts in Group 1 ($n=25$) were administered orlistat as a specific therapy for obesity for the period of 6 months, and life-style modifications including low caloric diet and physical exercises for 12 months, pts in Group 2 were recommended to observe the diet and physical exercises during 12 months. Peripheral blood samples were obtained at Mo12 for PCR evaluation of gene expression.

Abstract AB0964 – Figure 1. Body mass dynamics. **Abstract AB0964 – Figure 2.** Gene expression in obese pts with knee OA

Results: Following orlistat therapy pts from Group 1 managed to reduce their body weight by 10.07% at Mo 6 ($p<0.05$), while pts from Group 2 lost only 0.88% ($p=0.8$) of their body weight versus the baseline values. During the following 6 months pts from Group 2 on life-modifying regimen continued to lose their body weight, achieving 3.5% ($p>0.05$) weight reduction versus baseline values, while pts from Group 1 gained weight by 5.6% as compared to the values at Mo 6 during the study (figure 1). Expression of genes encoding inflammation, apoptosis and cell proliferation was assessed at Mo12 to evaluate possible correlation with the dynamics of body weight. Up-regulated expression ($p<0.05$) of genes encoding inflammation (TNF- α), cartilage destruction (cathepsin K), apoptosis (caspase-3) and cell proliferation (m-TOR) was documented in KOA obese pts from Group 1, gaining body weight during the second stage of the study, as compared to the expression values in pts from Group 2 (figure 1). The analysis demonstrated direct positive correlation ($p<0.05$) between expression of genes encoding inflammation, cartilage destruction and apoptosis and pain intensity in knee joints assessed by VAS and WOMAC scales.

Conclusions: Therefore up-regulation of m-TOR, caspase-3, TNF- α and cathepsin K gene expression is observed in obese pts with KOA following weight gain and worsening of clinical parameters, which is suggestive of aggravated apoptosis, inflammation and cartilage destruction, providing further KOA progression.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.5055

AB0965 MEDICAMENTAL AND NON-MEDICAMENTAL THERAPY PREGNANT WOMEN WITH HIP OSTEOARTHRITIS

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Objectives: The management of patients with severe pain caused by primary or secondary osteoarthritis (OA) of the hip joint (TBS) has not been developed. The aim of the present work was to evaluate the impact of NSAIDs, glucocorticoids (GCS), analgesics and non-drug treatment methods on pregnancy outcomes in patients with primary and secondary OA TBS

Methods: The study included 99 pregnant women aged 35 to 49 with an intensive pain (≥ 4.0 points for VAS) due to primary or secondary OA TBS. Depending on the form of OA, the severity of the pain and the patient's opinion, the therapy was prescribed – ibuprofen up to 800 mg per day orally ($n=31$) or paracetamol up to 1000 mg per day orally ($n=20$) or methylprednisolone up to 12 mg per day orally ($n=27$) or non-pharmacological methods ($n=21$). The efficacy of the treatment was evaluated within a month from the start of the therapy, pregnancy outcomes for the mother and fetus and pathology of the child after 12 months after the birth. The factors, associated with low efficacy of treatment, were evaluated.

Results: In 50 (51%) women was established primary OA TBS, in 49 (49%) – secondary OA TBS. A decrease of pain in TBS in patients of all treatment groups ($p<0.05$ for comparison with baseline) was registered. Patients with secondary OA, who received Methylprednisolone, showed a statistically significant ($p<0.05$) improvement in pain compared to patients in other clinical groups. A correlation was found between the intensity of pain syndrome (VAS) and BMI.

85 (85%) patients had urgent deliveries, 14 (14%) had premature, natural delivery in 82 (82%) women, and a caesarean section was performed in 29 (29%) cases. The cases of ante- and perinatal fetal death were not recorded.

Pathological conditions were absent in 28 (84.85%) of newborns, whose mothers refused medical treatment, in 28 (90.32%) newborns, who received ibuprofen, in 15 (75%) – paracetamol, and in 23 (85.19%), who were on methylprednisolone therapy (differences between groups are unreliable, $p\geq 0.05$). In 12 months after bearth in the group of newborns receiving antenatal ibuprofen, pathological conditions were observed in 3 children, paracetamol – in 5, metiprednisolone – in 4 children who were "without therapy" – in 5 children.

Conclusions:

- The use of non-medicamental and medicamental (non-selective NSAIDs or GCS in small doses or analgesics) treatment in pregnant woman with hip osteoarthritis has equal efficiency and safety for the health of the mother and fetus.
- Children, born to mothers with primary or secondary hip osteoarthritis, treated with NSAIDs or analgesics or GCS by medical treatment in age of 12th month do not differ from children, born to mothers with osteoarthritis of hip joints, receiving non-medicamental therapy.
- An increase of the body mass index of a pregnant woman with osteoarthritis of the hip joints is a predictor of refractoriness to any form of drug and non-drug therapy.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.2208