Abstract THU0419 – Figure 1. TJR events during the entire study, CTX-II.

Conclusion: High levels of sCTX-I and uCTX-II at BL were associated with increased risk of undergoing TJR of the knee or hip during the two year study. Our findings support the role of sCTX-I and uCTX-II as important biomarkers in clinical OA trials evaluating incidence of TJRs.

Disclosure of Interests: : Jonathan Bjerre-Bastos Employee of: I am a full-time employee in Nordic Bioscience, Anne-Christine Bay-Jensen Shareholder of: I own shares of Nordic Bioscience, Employee of: I am a full-time employee in Nordic Bioscience, Morten Karsdal Shareholder of: I own shares of Nordic Bioscience, Employee of: I am a full-time employee in Nordic Bioscience, Inger Byrjalsen Employee of: I am a full-time employee in Nordic Bioscience, Jeppe Ragnar Andersen Shareholder of: Nordic Bioscience, Employee of: Nordic Bioscience, Bente Juel Riis Shareholder of: Yes, I own shares in Nordic Bioscience, Employee of: I am a full-time employee in Nordic Bioscience, Claus Christiansen Shareholder of: Yes, I own shares in Nordic Bioscience, Employee of: I am a full-time employee in Nordic Bioscience, Asger Reinstrop Bihlet Shareholder of: Yes, I own shares in Nordic Bioscience., Employee of: I am a full-time employee in Nordic Bioscience
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THU0420 METABOLIC SYNDROME AND TRAJECTORIES OF LOCALISED PAIN AND GENERALISED PAIN

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Background: Metabolic syndrome (MetS) has been suggested as having a link to the pathophysiology of pain; however, no study has assessed whether MetS and its components are associated with localised pain and generalised pain and their courses over time.

Objectives: To describe the associations of MetS and its components with trajectories of localised knee pain (pain severity) and generalised pain (number of painful sites (NPS)) in a general older population.

Methods: 1,099 participants from a population-based older adult cohort study were recruited at baseline. 875, 768 and 563 participants attended years 2.6, 5.1 and 10.7 follow-up, respectively. Data were collected on demographic, psychological, lifestyle and comorbidities, blood pressure, glucose, triglycerides, and high-density lipoprotein (HDL) cholesterol. MetS was defined based on the National Cholesterol Education Program-Adult Treatment Panel III criteria. Radiographic knee osteoarthritis (ROA) was assessed by X-ray. Knee pain was measured by Western Ontario and McMaster Universities Osteoarthritis Index pain questionnaire at each time-point. Presence/absence of pain at the neck, back, hands, shoulders, hips, knees and feet was collected by questionnaire at each time-point.

Abstract THU0429 – Table 1. Results of four separate multiple linear regression models with the WOMAC as the dependent variable. Regression coefficients with 95% confidence intervals are shown.

	Parameter	Reference	WOMAC			
			Polyarthrosis	Hip OA	Knee and Hip OA	Knee OA
Model 1	Age	per 10 years	0.7 (-0.6 ; 2.0)	0.7 (-1.2 ; 2.6)	2.0 (-0.5 ; 4.4)	-0.1 (-3.5 ; 3.3)
	Gender: Male	Female	-3.8 (-6.7 ; -1.0)	0.8 (-3.5 ; 5.0)	-3.7 (-8.1 ; 0.6)	-0.5 (-7.6 ; 6.6)
Model 2*	BMI, kg/m ²	per 5 units	4.4 (3.2 ; 5.5)	3.1 (1.1 ; 5.2)	4.2 (1.8 ; 6.6)	4.1 (0.6 ; 7.6)
Model 3*	Symptom duration	per year	0.3 (0.2 ; 0.5)	0.4 (0.2 ; 0.6)	0.2 (-0.0 ; 0.4)	0.4 (0.0 ; 0.8)
Model 4*	WHO-5 (0-100)	per 10% worsening	4.4 (3.8 ; 5.0)	3.2 (2.2 ; 4.1)	4.1 (3.3 ; 5.1)	3.9 (2.1 ; 5.9)

*Model adjusted for age, gender. BMI: Body Mass Index, OA: Osteoarthritis, WOMAC: Western Ontario and McMaster Universities Osteoarthritis Score.

Group-based trajectory modelling was applied to identify pain trajectories. Multi-nominal logistic regression was used for the analyses.

Results: Of 985 participants included in this study, 32% of participants had MetS and 60% had ROA at baseline. Three localised knee pain severity trajectories were identified: 'Minimal pain' (52%), 'Mild pain' (33%) and 'Moderate pain' (15%). Three NPS trajectories were identified: 'Low NPS' (12%), 'Medium NPS' (38%), and 'High NPS' (49%). In multivariable analysis without adjusting for central obesity, central obesity increased risk of belonging to both 'Mild pain' and 'Moderate pain' trajectories as compared to the 'Minimal pain' trajectory group, but MetS, hypertriglyceridemia and low HDL were only associated with 'Moderate pain' trajectory [relative risk (RR): 1.67-2.26, all $P < 0.05$]. Similarly, central obesity was also associated with both 'Medium NPS' (RR 2.35, 95%CI 1.40–3.92) and 'High NPS' trajectories (RR 3.07, 95%CI 1.85–5.08) compared to 'Low NPS' trajectory group, whereas MetS was only associated with 'High NPS' trajectory (RR 2.60, 95%CI 1.54–4.41). These associations became weak and non-significant after further adjustment for central obesity.

Conclusion: MetS is predominantly associated with trajectories of localised and generalised pain through central obesity, suggesting that weight management is important in the prevention and therapy of pain over time.

Disclosure of Interests: None declared

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THU0421 EFFECT OF GAME BASED EXERCISE PROGRAMS ON PAIN, FUNCTIONAL MOBILITY AND BALANCE IN PATIENTS WITH KNEE OSTEOARTHRITIS: RANDOMIZED CONTROLLED STUDY

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Background: Osteoarthritis is a chronic joint disease affecting the knee, hip and hand joints. Exercise is an integral component of conservative treatment for osteoarthritis. However, virtual reality applications using interactive games for rehabilitation have become a focus of interest in recent years.

Objectives: The aim of this study was to evaluate the effects of virtual reality games on knee pain, functional mobility and balance in patients with knee osteoarthritis.

Methods: Fifty patients who were complaining of knee pain, aged 40-70 years, and were diagnosed with Kellgren-Lawrence stage 2, 3, 4 idiopathic knee osteoarthritis was included. Patients were randomly assigned to two equal groups (n = 25) as the control and the study group. Age, sex, weight, height, duration of illness was recorded for all patients. In the bilateral two-way knee radiography; Kellgren-Lawrence score of the knee with the higher visual analog scale (VAS) pain score was recorded. Conventional physical therapy program, associated with knee osteoarthritis exercises, was applied routinely to all patients with knee osteoarthritis for three weeks. In the study group, all patients received virtual reality game-based exercise program by using a game console. In both groups, baseline and final values of VAS score, osteoarthritis index total score (WOMAC), and intra-community balance and mobility scale (CB&M) score of each patient were recorded. Mann-Whitney U and Independent Samples T tests were used for statistical analysis, and p value less than 0.05 was considered significant.

Results: In both groups, significant change in VAS, WOMAC osteoarthritis index, and CB&M score was observed ($p < 0.05$). In the study group, VAS, WOMAC osteoarthritis index, and CB&M scores were significantly different than control group ($p < 0.05$). The differences between baseline

and final scores of VAS and WOMAC were significantly higher ($p < 0.05$) in study group.

Conclusion: The results of the present study showed that virtual reality game-based exercise programs performed better results than conventional treatment program in patients with knee osteoarthritis.

REFERENCES:

- [1] Bennell KL, Dobson F, Hinman RS. Exercise in osteoarthritis: moving from prescription to adherence. *Best Pract Res Clin Rheumatol*. 2014; 28(1): 93-117.
- [2] Ju SB, Park GD, Kim SS. Effects of proprioceptive circuit exercise on knee joint pain and muscle function in patients with knee osteoarthritis. *J Phys Ther Sci*. 2015; 27(8): 2439-41.
- [3] Molina KI, Ricci NA, de Moraes SA, Perracini MR. Virtual reality using games for improving physical functioning in older adults: a systematic review. *J Neuroeng Rehabil*. 2014; 11: 156.

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THU0422

COMPARISON OF PRP DERIVED GROWTH FACTOR (PRGF) VERSUS HYALURONIC ACID (HA) IN MILD TO MODERATE KNEE OSTEOARTHRITIS; A SINGLE BLIND ONE YEAR RANDOMIZED CLINICAL TRIAL STUDY

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Background: Osteoarthritis (OA) is the most common joint disease with characteristics of progressive loss of joint cartilage.

Objectives: Aim of this study was to evaluate clinical outcomes of intra-articular injection of PRP derived growth factor (PRGF) versus hyaluronic acid (HA) in patients with knee osteoarthritis.

Methods: 102 patients with grade II or grade III knee OA were randomly assigned to 2 intra-articular injections of PRGF 3 weeks apart or 3 weekly injections of HA. Primary outcome was the mean change from baseline until 2, 6 and 12 months post intervention in scores of visual analog scale (VAS), WOMAC and Lequesne index.

Results: The mean age of patients was 57.08 ± 7.3 in PRGF compared to 58.63 ± 7.09 in HA group. In PRGF group, VAS decreased from 7.8 ± 1.5 to 4.5 ± 1.7 , and from 7.8 ± 1.1 to 6.1 ± 1.8 in the HA group after 12 months ($P < 0.0001$). Total WOMAC score decreased from 41.96 ± 11.71 to 27.10 ± 12.3 ($P = 0.02$), and from 39.71 ± 10.4 to 32.41 ± 11.8 after 12 months, respectively ($P > 0.05$). In Lequesne index, all scores were significantly decreased after 12 months in PRGF group in comparison to HA group ($P < 0.001$).

Conclusion: Although PRGF and HA were both effective, but PRGF injection resulted in significantly higher satisfaction, lower VAS and Lequesne pain score and improvement in function of patients with symptomatic mild to moderate knee osteoarthritis.

REFERENCES:

- [1] Raeissadat SA, Rayegani SM, Tabibian E, Rahimi Dehghan S. Intra-articular ozone injection efficacy in knee osteoarthritis: A systematic review with meta-analysis. *Annals of Physical and Rehabilitation Medicine*. 2018;61:e132-e3.
- [2] Raeissadat SA, Rayegani SM, Hassanabadi H, Fathi M, Ghorbani E, Babaei M, et al. Knee Osteoarthritis Injection Choices: Platelet-Rich Plasma (PRP) versus Hyaluronic Acid (A one-year randomized clinical trial). *Clinical Medicine Insights: Arthritis and Musculoskeletal Disorders*. 2015;8:CMAMD.S17894.
- [3] Raeissadat SA, Rayegani SM, Ahangar AG, Abadi PH, Mojjani P, Ahangar OG. Efficacy of Intra-articular Injection of a Newly Developed Plasma Rich in Growth Factor (PRGF) Versus Hyaluronic Acid on Pain and Function of Patients with Knee Osteoarthritis: A Single-Blinded Randomized Clinical Trial. *Clinical medicine insights Arthritis and musculoskeletal disorders*. 2017;10:1179544117733452.

Abstract THU0422 – Figure 1. Mean values of Lequesne total at baseline, 2, 6 and 12 months after injection. PRGF indicates plasma rich in growth factor

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THU0423

ANTERIOR TIBIOTALAR FAT PAD MORPHOLOGY AND SIGNAL INTENSITY ON MAGNETIC RESONANCE IMAGING ARE CORRELATED WITH PATIENT CHARACTERISTICS AND JOINT PATHOLOGY

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Background: Ankle sprains are the most frequent form of trauma in the ankle and up to 33% of patients experience ongoing pain 1 year after the initial trauma.¹ In the ankle, trauma is the primary etiology of osteoarthritis with an overwhelming proportion of 70-78%.² Recently, our group completed a small pilot study that suggested that the anterior tibiotalar fat pad (ATFP) should be investigated as a source of inflammation and pain.³

Objectives: In this study, we tried to investigate the innovative concept of the ATFP as missing link in the pathogenesis of persistent complaints and potential source driving inflammation in the development of osteoarthritis.

Methods: The present study is a secondary analysis of an observational case control study by Van Ochten et al.⁴ We included 106 patients with a Kellgren & Lawrence score of 0 in the tibiotalar joint on x-ray. T1 MRI scans were assessed for the signal intensity and area of the ATFP by mapping the fat pad in 'Mimics 18.0'. After importing those mapped scans in the program 'MATLAB', quantitative values of intensity and area were generated. Those values were statistically tested for correlations with patient characteristics and structural abnormalities by univariate and multivariate linear regression.

Results: MRI signal intensity of the ATFP is associated with BMI ($p = 0.03$), sex ($p < 0.01$) and age ($p = 0.01$). ATFP area is correlated with sex ($p < 0.01$) and presence of pre-OA signs in the subtalar joint ($p = 0.01$). After multivariate analysis, correcting for sex, subtalar pre-OA signs and BMI, persistent complaints were associated with ATFP area ($p = 0.04$).

Conclusion: This study demonstrates the involvement of the ATFP in hindfoot joint pathology. ATFP MRI characteristics were also influenced by patient characteristics. Further research should confirm these findings in a more elaborate population including OA patients, focus on histological validation and determine underlying pathogenic processes that may explain the observed correlations.

REFERENCES:

- [1] van Rijn, R. M. et al. What Is the Clinical Course of Acute Ankle Sprains? A Systematic Literature Review. *American Journal of Medicine* 121, (2008).
- [2] Valderrabano, V., Horisberger, M., Russell, I., Dougall, H. & Hintermann, B. Etiology of ankle osteoarthritis. *Clinical Orthopaedics and Related Research* 467, 1800–1806 (2009).
- [3] Clockaerts, S. et al. The anterior tibiotalar fat pad as a source of pain and inflammation in osteoarthritis of the ankle: anatomy, histology and imaging. *Osteoarthr. Cartil.* 26, S120 (2018).