breakthrough infection, collecting peripheral blood mononuclear cells (PBMCs) 2-4 weeks after each immunisation. Samples were incubated with SARS-CoV-2 spike, nucleocapside or membrane peptides. The percentage of responding T cells was measured by flow cytometry (2) (±0.01% increase in responding CD4 cells, ≥0.001% increase in responding CD8 cells, compared to baseline).

**Results:** Between February 2021 and December 2022, 144 patients on TNFi (monotherapy n=86 (60%), combination with methotrexate or azathioprine n=58 (40%)) were included (median age 48 years [IQR 33-57]; 51% women) (Table 1). The proportions of arthritis vs IBD patients with CD4 responses after 2 vaccine doses were 75% (12/16 patients) vs 86% (26/30), and after 3 doses 83% (10/12) vs 93% (28/30). In total, 80% (4/5) of arthritis patients showed further increases in CD4 responses after a 4th vaccine dose. Conversely, 81% (13/16) of arthritis patients vs 55% (16/29) of IBD patients had CD8 T cell responses after two doses, and 67% (8/12) vs 62% (18/29) after three doses. A 3rd and 4th dose induced higher CD8 responses compared to the previous dose in 55% (6/11) and 100% (5/5) of arthritis patients. Arthritis patients had lower T cell responses than IBD patients after the 3rd dose; median CD4 response 0.024% [IQR 0.009-0.036] vs 0.089% [IQR 0.040-0.182], p=0.0004; median CD4 response 0.003% [IQR 0.001-0.016] vs 0.044% [IQR 0.009-0.140], p=0.0032 (Figure 1). This difference remained robust after adjusting for age and sex, p<0.001, but was no longer detected after the 4th vaccine dose. Breakthrough infection elicited increased T cell responses across all diagnoses to spike (p<0.0001), and to nucleocapsid (p=0.0002) and membrane proteins (p=0.001) compared to unstimulated T cells. Also, spike-specific T cell responses increased compared to the 3rd dose (median CD4 T cell response 0.18% vs. 0.06%, p=0.003; CD8 T cell response 0.08% vs. 0.01%, p=0.0001), but to a lesser extent compared to the 4th dose (median CD4 response 0.18% vs. 0.12%, p=0.05; CD8 response 0.08% vs. 0.05%, p=0.26). There were no differences in cellular response between patients on TNFi mono- or combination therapy (p=0.93).

**Conclusion:** Patients on TNFi show improved cellular responses following each immunisation, with infection generating a strong and broad T cell response. Arthritis patients had significantly lower CD4+ responses compared to IBD immunisation, with infection generating a strong and broad T cell response.

**Acknowledgements:** We thank the patients and health-care workers who have participated in the Norwegian study of vaccine response to COVID-19. We thank the patient representatives in the study group, Kristin Isabell Kirkeneng Espé and Roger Thoresen. We thank all study personnel, laboratory personnel, and other staff involved at the departments involved, particularly Synnøve Aure, Margareth Svensson, May Britt Solem, Elisabeth Ressum-Haaland, and Kjetil Bergsmark. We thank the patients and health-care workers who have participated in the Norwegian study of vaccine response to COVID-19. We thank the patient representatives in the study group, Kristin Isabell Kirkeneng Espé and Roger Thoresen. We thank all study personnel, laboratory personnel, and other staff involved at the departments involved, particularly Synnøve Aure, Margareth Svensson, May Britt Solem, Elisabeth Ressum-Haaland, and Kjetil Bergsmark.


**Moving into better health**

**OP0086-HPR**

**THE SWEDISH OSTEOARTHRITIS REGISTRY. TRENDS IN SWEDISH OSTEOARTHRITIS HEALTH CARE BETWEEN 2008-2021**

**Keywords:** Patient information and education, Descriptive Studies, Osteoarthritis

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**Background:** In 2012 the Swedish national guidelines for osteoarthritis (OA) were published. The guidelines implied that all patients with OA should obtain information and supervised exercise as first-line intervention and that OA is a clinical, not radiological diagnosis. The Swedish OA registry contains data which measure compliance to the guidelines since 2008 [2].

**Objectives:** To describe the trends over time from 2008 to 2021 for patients who have received first-line interventions for hip and knee OA in Sweden and adherence of the healthcare staff to the national guidelines.

**Methods:** Descriptive registry-based study including patients with hip or knee OA who participated in first-line interventions including education and exercise. Data were extracted from the Swedish OA registry between January 1st, 2008, and December 31, 2021. The registry contains patient-reported outcomes and physotherapist-reported outcomes. In this study the following physotherapist-reported outcomes were described over time: radiological examination before first-line intervention, if the first-line intervention was given the first time the patient sought health care caused of OA, which explanation patients had been given about their disease, intake of painkillers before the start of first-line intervention and the percentage who got supervised exercise >10 times according to the guidelines of OA in Sweden. The following patient-reported outcomes were described over time: mean BMI at the first visit, and mean age at the first visit. To be included in the study, participants had to meet the following criteria: i) clinical diagnosis of OA, with hip or knee OA as the most symptomatic joint, ii) provided 3-month follow-up.

**Results:** A total of 175 764 participants with hip or knee OA were included in the study. The trends from 2008-2021 showed that the proportion of patients who had a radiological examination before entering the first-line intervention decreased from 97 % to 65 % in men and from 95% to 62 % in women. The proportion of patients who get ass to first-line intervention the first time they seek for their care caused of OA, which explanation patients had been given about their disease, intake of painkillers before the start of first-line intervention and the percentage who got supervised exercise >10 times according to the guidelines of OA in Sweden. The following patient-reported outcomes were described over time: mean BMI at the first visit, and mean age at the first visit. To be included in the study, participants had to meet the following criteria: i) clinical diagnosis of OA, with hip or knee OA as the most symptomatic joint, ii) provided 3-month follow-up.

**Conclusion:** The results implicit that the implementation of a supported OA self-management program in Sweden has been successful and changed the care given to patients with OA in Sweden. However, the national guidelines for OA, have still not been fully implemented. We need to keep implementing the guidelines so all patients with OA get the first-line intervention at the right time.
REFERENCES:

Acknowledgements: N.I.
Disclosure of Interests: None Declared.
DOI: 10.1136/annrheumdis-2023-eular.1375

OP0087-HPR

HIGH INTENSITY EXERCISE IMPROVES GENERAL AND PHYSICAL FATIGUE IN PATIENTS WITH ESTABLISHED RHEUMATOID ARTHRITIS

Keywords: Physical therapy/Physiotherapy, Randomized control trial, Rheumatoid arthritis

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Background: Despite more effective control of inflammation by improved pharmacological therapies, persistent pain and fatigue are still a major problem among patients with rheumatoid arthritis (RA), which often leads to slow deterioration of function and general health.

Objectives: To evaluate the effect of high-intensity exercise on fatigue, pain, and general health in patients with established RA.

Methods: Patients with RA (ACR/EULAR 1987/2010 criteria), disease duration > 12 months, were recruited and randomised to either an exercise group or a control group. The exercise program of 12 weeks comprised supervised cardiorespiratory high-intensity interval exercise and strength exercise twice per week plus an additional non-supervised session of the patient’s own choice. The controls received individual information for physical activity according to the general health recommendations and were encouraged to be active on moderate occasions.

The controls received individual information for physical activity according to the general health recommendations and were encouraged to be active on moderate occasions. Evaluations were conducted at baseline (BL) and 3 months (M3; Fatigue, using the Multidimensional Fatigue Inventory (MFI 20) scale, including five subscales; general fatigue, physical fatigue, mental fatigue, reduced activity and reduced motivation (range = 4 to 20 for each subscale, higher score = higher degree of fatigue); visual analogue scale (VAS) was used for the assessment of average pain intensity, fatigue and general health during the last week due to the rheumatic disease (0 = no symptom, 100 = worst possible).

Results: A total of 73 patients median age 49 (86.3% women), median disease activity 2.0 (1.34 to 2.56 IQR) (DAS28-ESR) were included in the study. At 3 months, there was a significant improvement on MFI-20 subscales general fatigue, physical fatigue, mental fatigue, reduced activity and reduced motivation (range = 4 to 20 for each subscale, higher score = higher degree of fatigue; visual analogue scale (VAS) was used for the assessment of average pain intensity, fatigue and general health during the last week due to the rheumatic disease (0 = no symptom, 100 = worst possible).

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Variables were presented as median and IQR. MFI Multidimensional Fatigue Inventory, VAS Visual Analog Scale Fatigue, Pain, Global. Delta values were compared using the Mann–Whitney U test. Within-group comparisons were made with Wilcoxon signed rank test. Significant difference, p < 0.05. **Significant difference, p < 0.01. ***Significant difference, p < 0.001

REFERENCES: NIL.
Disclosure of Interests: None Declared.
DOI: 10.1136/annrheumdis-2023-eular.3470

OP0088-HPR

FACTORS ASSOCIATED WITH MEETING RECOMMENDED PHYSICAL ACTIVITY IN PATIENTS WITH RHEUMATOID ARTHRITIS WHO HAVE POOR PHYSICAL FUNCTION

Keywords: Patient reported outcomes, Lifestyles, Rheumatoid arthritis

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Background: Rheumatoid arthritis (RA) is a chronic disease that often leads to a major impact on physical function and quality of life. It is well known that physical activity is an important part of treatment and improve clinical outcome.

Objectives: The aim was to study factors associated with meeting recommended level of physical activity in people with RA with poorer physical function.

Methods: In 2017, a survey was sent to patients included in the BARFOT (Better Anti-Rheumatic pharmacotherapy) cohort [1]. The questionnaire included questions on age, sex, disease duration, smoking, body mass index (BMI), physical function assessed by health assessment questionnaire (HAQ; 0-3, best to worst), numeric rating scale (NRS) pain (0-10, best to worst), NRS fatigue (0-10, best to worst), disease activity assessed by self-reported 28-tender (TJC, 0-28) and swollen joint count (SJC, 0-28), health-related quality of life assessed by Europol 5-dimension 3-level (EQ5D; 0-1, worst to best), empowerment assessed by the Swedish Rheumatic Disease Empowerment Scale (SWE-RES-23; 1-5, worst to best), cardiovascular diseases (CVD), and antirheumatic treatment, corticosteroids (CS), conventional disease-modifying antirheumatic drug (cDMARD), biologic DMARD (bDMARD). 1065 patients (69%) answered the questionnaire and were dichotomized based on the median of HAQ, which was 0.5. The group with the worst physical function, HAQ > 0.5, was further dichotomized based on whether they met the World Health Organisation (WHO) recommended level of physical activity (pulse-increasing physical activity with moderate intensity at least 150 minutes/week or at least 75 minutes/week with high intensity) or not. Median and interquartile range (IQR) and Mann-Whitney U test or chi-2 were used to analyse differences between groups, when appropriate. A logistic regression model adjusting for age and sex was used to study factors associated with fulfilling the recommendations on physical activity.

Table: Differences between groups in assessment measures at 3 months compared to baseline

<table>
<thead>
<tr>
<th></th>
<th>Intervention group (n=37)</th>
<th>Control group (n=36)</th>
<th>Between group</th>
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<tbody>
<tr>
<td>Baseline</td>
<td>M3-BL (n=35)</td>
<td>M3-BL (n=29)</td>
<td>Analysis of change</td>
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<tr>
<td>Baseline</td>
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<td>p-value</td>
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<tr>
<td>Mental fatigue</td>
<td>11.0</td>
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<td>(7.0 to 12.5)</td>
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<tr>
<td>Reduced</td>
<td>8.0</td>
<td>0.0</td>
<td>(5.0 to 10.0)</td>
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<tr>
<td>motivation</td>
<td>(5.0 to 10.0)</td>
<td>(3.0 to 10.0)</td>
<td>-3.0 to 10.0</td>
</tr>
<tr>
<td>Reduced activity</td>
<td>11.0</td>
<td>0.0</td>
<td>(8.0 to 13.0)</td>
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<tr>
<td></td>
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<td></td>
<td>11.0</td>
<td>0.0</td>
<td>(8.00 to 13.0)</td>
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<tr>
<td></td>
<td>0.0</td>
<td>0.0</td>
<td>(3.0 to 2.75)</td>
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<td>VAS</td>
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<tr>
<td>Fatigue</td>
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<td>(15.9 to 49.2)</td>
</tr>
<tr>
<td>Pain</td>
<td>14.7</td>
<td>1.0</td>
<td>(7.6 to 17.9)</td>
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<tr>
<td>G-health</td>
<td>15.7</td>
<td>0.0</td>
<td>(7.0 to 26.8)</td>
</tr>
</tbody>
</table>

Variables were presented as median and IQR. MFI Multidimensional Fatigue Inventory, VAS Visual Analog Scale Fatigue, Pain, Global. Delta values were compared using the Mann–Whitney U test. Within-group comparisons were made with Wilcoxon signed rank test. Significant difference, p < 0.05. **Significant difference, p < 0.01. ***Significant difference, p < 0.001

REFERENCES: NIL.
Disclosure of Interests: None Declared.
DOI: 10.1136/annrheumdis-2023-eular.1375

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