how previous results can be generalized to other populations with different life-style and physical activity habits.

Objectives: To investigate if knee OA is associated with lower physical activity in a general middle-aged Dutch population. Furthermore, to investigate the association of physical activity with patient reported outcomes such as knee pain and function, and health-related quality of life in individuals with knee OA.

Methods: We used cross-sectional data from the Netherlands Epidemiology of Obesity (NEO) study, in which participants aged 45-65 years were included. Clinical knee OA was defined using the ACR criteria. Structural knee OA was defined on MRI using the modified criteria by Hunter et al. in a random subset of 1,285 individuals of our study population.

We assessed knee pain and function with the Knee injury and Osteoarthritis Score (KOOS), and health-related quality of life (HRQoL) with the Short Form (SF)-36. Physical activity (in Metabolic Equivalent of Task (MET) hours per week) was assessed using the Short Questionnaire to Assess Health-enhancing physical activity (SQUASH).

We used linear regression analyses to investigate 1) the association of knee OA with physical activity, and 2) of physical activity with knee pain, function, and HRQoL in participants with clinical knee OA. All analyses were adjusted for age, sex, body mass index (BMI), ethnicity, educational level and comorbidities. To account for possible information bias, we performed a sensitivity analysis to assess the association between clinical knee OA and physical activity measured by an accelerometer in a random subset of 15% of the study population.

Results: Of 6,212 participants, we observed clinical knee OA in 14%, and structural knee OA in 12%. The general population characteristics and median physical activity of our study population are presented in Table 1. In comparison to participants without knee OA, participants with clinical knee OA had on average 9.60 (95% CI 3.70;15.50) MET hours per week more total physical activity (Figure 1). Structural knee OA was associated with 3.97 (-7.82; 15.76) MET hours per week more physical activity, compared with no structural knee OA.

Sensitivity analysis showed a weak positive association of clinical knee OA with physical activity measured by an accelerometer: 2.37 (-6.05; 10.80) MET hours per week more physical activity in participants with clinical knee OA, compared with participants without clinical knee OA.

In the subpopulation of participants with clinical knee OA, physical activity was not associated with knee pain, function or HRQoL.

Conclusion: Knee OA was not associated with lower physical activity in this middle-aged Dutch population. This contrasts previous findings and warrants caution when generalizing physical activity outcomes to other populations. Furthermore, it stresses the need of more insight in the barriers and facilitators of physical activity in the middle-aged population.

Table 1. Characteristics of the NEO study population

	All n = 6,214	No clinical knee OA 86%	Clinical knee OA 14%
General population characteristics			
Age (year)	55.7 (6.0)	55.4 (6.1)	57.5 (5.0)
Sex (% women)	55	54	67
BMI (kg/m ²)	26.3 (4.4)	26.1 (4.3)	27.6 (5.1)
Comorbidities (% present)	24	23	32
Physical activity			
Total ^a (MET-hours per week)	118.8 (76.8;155.0)	118.4 (76.6;154.4)	123.5 (77.8;157.2)

Numbers represent mean (SD) or percentages. ^amedian (25th, 75th percentiles). Abbreviations: OA = osteoarthritis. BMI = Body Mass Index. MET = Metabolic Equivalent of Task.

Figure 1. Association of clinical and structural knee OA with physical activity
Figure 1: the association of clinical and structural knee osteoarthritis with physical activity adjusted for age, sex, body mass index, ethnicity, educational level and comorbidities. Reference: participants without knee osteoarthritis. The dots represent the means, and the blue and green lines represent the 95% confidence interval around the means. Abbreviations: OA = osteoarthritis. MET = Metabolic Equivalent of Task.

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POS1432

**SHORT-TERM RISK OF OSTEOPOROSIS
IN ADULTS TREATED WITH CORTICOSTEROIDS:
AN OBSERVATIONAL STUDY**

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Background: Exposure to corticosteroids is recognised to increase the risk of osteoporosis.

Objectives: Our aim was to evaluate patients' short-term absolute risk of osteoporosis over the course of their first continuous exposure to corticosteroids.

Methods: This was an observational study using UK data from the Clinical Practice Research Datalink. Adult patients were selected if exposed to systemic corticosteroids for any condition and had no prior osteoporosis. Non-exposed adults matched on age, sex, and disease burden were selected from the general population. Patients were followed from their first exposure to corticosteroid to the earlier of 90 days following the end of continuous prescribing or for a maximum of three years. Cohorts were categorised by age (18-42 years, 43-67 and 68-92 years), BMI (underweight, normal overweight, obese and obese+) and gender. Absolute risk rates were calculated for each of these categories.

Results: In total, 573,056 exposed patients were matched 1:1 to non-exposed controls. Mean age was 52 years; 57% were female. The mean and median days' supply were 50.9 and 13 days, respectively. Underweight females aged 68-92 years exposed to corticosteroids had the highest absolute risk of osteoporosis (70.9 per 1000 patient years (PKPY)); in matched non-exposed controls this was 26.6 PKPY. Generally, following their first continuous exposure to corticosteroids, patients taking steroids had greater risk of osteoporosis compared with those in the same age, sex and BMI category never exposed to corticosteroids.

Conclusion: Whilst it is understood that exposure to corticosteroids increases the risk of osteoporosis, there are large differences in risk in accordance with age, sex and BMI. Alternatives to corticosteroids are urgently needed.

Age group	BMI group	Male					Female				
		Steroid-exposed		Never exposed		p-value	Steroid-exposed		Never exposed		p-value
		Patients	Absolute rate (per 1,000 patient years)	Patients	Absolute rate (per 1,000 patient years)		Patients	Absolute rate (per 1,000 patient years)	Patients	Absolute rate (per 1,000 patient years)	
18-42	1: Underweight	1,242	2.0	1,195	0.0	0.5661	3,079	4.5	3,486	0.9	0.1361
	2: Normal	18,798	2.2	19,638	0.0	<0.0001	42,234	0.9	47,340	0.1	0.0049
	3: Overweight	16,536	2.6	15,114	0.0	0.0001	24,893	0.5	24,009	0.1	0.2382
	4: Obese +	10,311	0.6	8,453	0.0	0.2874	26,600	0.6	20,320	0.3	0.4614
43-67	1: Underweight	1,254	27.4	683	0.0	0.0040	2,420	30.9	1,990	18.5	0.1141
	2: Normal	27,037	8.6	26,569	2.0	<0.0001	45,467	15.9	50,423	6.1	<0.0001
	3: Overweight	42,428	4.3	43,872	0.7	<0.0001	42,620	10.8	43,253	4.1	<0.0001
	4: Obese +	31,478	2.5	30,852	0.8	0.0007	45,339	6.0	39,876	2.4	<0.0001
68-92	1: Underweight	936	30.3	432	10.3	0.1505	1,532	70.9	1,239	26.6	0.0003
	2: Normal	15,891	11.3	15,021	4.5	<0.0001	18,308	42.3	18,717	18.6	<0.0001
	3: Overweight	21,371	7.3	23,137	1.8	<0.0001	19,149	26.2	19,760	12.9	<0.0001
	4: Obese +	11,216	5.6	11,396	1.9	0.0021	14,453	20.0	13,614	8.7	<0.0001

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POS1433 IMPACT OF RHEUMATOID ARTHRITIS ON STRESS: A SYSTEMATIC SCOPING REVIEW

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Background: The literature about the impact of Rheumatoid Arthritis (RA) on mental health is mostly focused on depression and anxiety. Yet, patients can experience stress without depressed mood or anxiety.

Objectives: To examine the impact of RA on psychological stress excluding depression and anxiety focusing on 3 questions: 1) What is the stress level of RA patients compared to a control group? 2) Which types of stress do RA patients experience? 3) Which are risk factors to develop stress as an RA patient?

Methods: Four scientific databases, EMBASE, PubMed (including MEDLINE), Web of Science Core Collection and Cochrane Library, were systematically

Table 1. Included Studies

First Author	Year	Country	Population	Age Mean $\pm$ SD	Stress Instrument	Quality Assessment
Bugajska	2010	Poland	N=437 Polish N=137 German	>50y (71%) >50y (38%)	SF36v2	AXIS: 16/20
Coty	2017	USA	N=80	54y $\pm$ 12y	RCQW	AXIS: 17/20
Cunha	2016	Portugal	N=80	58y	DASS-21	AXIS: 10/20
Goulia	2015	Greece	N=168	55y $\pm$ 13y	SCL-90R	MINORS: 11/16
Latman	1996	USA	RA, N=128 OA, N=79	56y 63y	SRRS	AXIS: 20/20
Mancuso	2006	USA	RA, N=122 HC, N=122	49y $\pm$ 12y 49y $\pm$ 12y	DUSOCS	MINORS: 20/24
Nyklicek	2015	The Netherlands	N=201	57y $\pm$ 12y	PSS	MINORS: 13/16
Persson	2005	Sweden	N=158	52y	SCL-90R	MINORS: 12/16
Rahim	2018	Malaysia	N=189	52y $\pm$ 11y	DASS-21	AXIS: 17/20
Rice	2017	Canada	RA, N=226 CP, N=229	58y $\pm$ 15y 45y $\pm$ 12y	DASS-21	AXIS: 17/20
Rice	2016	Canada	RA, N=163 CP, N=167	56y $\pm$ 13y 45y $\pm$ 11y	DASS-21	AXIS: 18/20
Richter	2018	Germany	RA, N=163 HC, N=167	48y $\pm$ 10y 43y $\pm$ 10y	ERI	AXIS: 17/20
Smith	2002	USA	RA, N=93 OA, N=82 HC, N=80	RA, 62y OA, 65y HC, 62y	1 question probing stress	MINORS: 17/24
Treharne	2007	UK	N=134	55y	PSS	MINORS: 11/16
Turner-Cobb	1998	UK	RA, N=13	42y $\pm$ 8y	LEI/HUS	MINORS: 17/24
Zautra	1997	USA	CP, N=24 N=41	39y $\pm$ 4y 55y $\pm$ 10y	ISLE	MINORS: 12/16

searched from inception until 19/04/2020. Eligible studies included psychological stress in RA patients as outcome. Two reviewers (CV&AVB) independently screened titles and abstracts, and later full texts for eligibility. Full-text screening excluded studies without a separate RA population, with a focus on only anxiety and/or depression or not answering at least 1/3 research questions. Quality was appraised by MINORS/AXIS tools.

Results: From 11 115 potentially relevant studies, 16 studies met the inclusion criteria (Table 1). Remarkably, 13 different stress measurement instruments were picked-up in this review. Work stress and interpersonal stress seem more prevalent in RA patients compared to healthy controls. Stress at disease onset was more prevalent in RA compared to osteoarthritis. Psychological stress was higher in patients with chronic pain compared to RA. Role stress, social stress and work stress were induced by RA. More disability, more pain, less social support, lower income, younger age and personality factors like excessive worrying, pessimism, and sensitivity to anxiety, seem to increase the risk for increased stress levels.

Conclusion: This scoping review is to our knowledge the first to address the heterogeneity of measurement tools and definitions of stress in RA research. It provides the basis for further research, which is needed to predict different stress trajectories and respond to these with patient-centered interventions.

Disclosure of Interests: None declared

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POS1434 WHICH PROGNOSTIC FACTORS MIGHT PREDICT THE NEED FOR TREATMENT ADAPTATION IN EARLY RHEUMATOID ARTHRITIS? A COMPARISON OF MACHINE LEARNING, SURVIVAL ANALYSIS AND REGRESSION METHODS

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Background: Current EULAR guidelines recommend treating RA early, intensively and to-target. A data-driven tool for planning the optimal moment for subsequent visits might adapt visit schedules more to the patient's needs, without losing treatment quality.

Objectives: To determine the optimal statistical model and clinical factors to predict the time to a treatment adaptation in early RA patients.

Methods: This study included 379 patients from the treat-to-target Care in Rheumatoid Arthritis (CareRA) trial. The CareRA protocol included 2 predefined treatment adaptation steps for patients not reaching low disease activity (DAS-28CRP < 3.2). The 1st adaptation was an MTX dose increase and the second one was adding/increasing the dose of a 2nd csDMARD. Three predictive models (Cox Proportional Hazards, Linear Multi-Task Regression and Random Survival Forest) were trained and validated to predicting time until these 2 adaptations. Factor selection for these models was performed by applying Cox Proportional Hazards with LASSO penalty to each set of demographic and clinical variables recorded at baseline, w4 and w8. Models used these factors at these 3 time points to predict future treatment adaptations. Model performance was estimated by the Uno Concordance Index with five-fold cross-validation. Missing data were imputed by interpolation or mean score.

Results: Factors selected to predict the first per protocol change included TJC, SJC, HAQ, CRP, pain and morning stiffness > 15min. Factors selected to predict the second per protocol change included TJC, SJC, PGA, PhGA. Uno Concordance indices showed similar scores per different statistical model but higher scores at w4 and w8 compared to baseline indicating a better predictive performance (Table 1. next page).