frequency, intensity and duration/repetitions, and regular evaluations (1). The 2018 EULAR recommendations for PA (2) state that this is also effective, feasible and safe for people with rheumatic diseases. Therefore, the Ankylosing Spondylitis Association of Switzerland (SVMB) has started to implement assessments of all four fitness dimensions in their exercise groups (n=68). Criteria for selection of an assessment were its psychometric properties and feasibility for group setting, i.e. low costs and material requirements: Chester step test (CST) for cardiorespiratory fitness (3); adapted Core Strength Endurance test battery (CSE) for muscle strength (4); Bath AS Metrology Index (BASMI) for flexibility (5); Single-Leg-Stance test (SLS) for balance (as proxy for neuromotor activities) (6). For all assessments, except CSE, norm values for healthy people are available.

Objectives: To assess the fitness status of people with axSpA across four volunteering pilot groups and evaluate if between-subject variables of interest are associated with fitness status.

Methods: Participants were assessed at baseline and after 6 months on all four fitness dimensions. For each dimension, a linear mixed model with random intercept was fitted to the data with the within-subject variables time and measurement condition and the between-subject variables age, disease duration, disease activity (Bath AS Disease Activity Index, BASDAI) and PA level (weekly Metabolic Equivalent of Task MET) as explanatory variables.

Results: Of 30 patients assessed, 10 (33%) were women, mean age was 58.8 (SD 9.68) years, mean disease duration was 32.6 (SD 9.68) years, mean disease activity was 3.1. (SD 2.36) and mean PA per week was 5013 (SD 3479.77) METs. Mean estimated VO₂max for cardiorespiratory fitness was 35.2 (SD 6.59). Disease activity was negatively (slope=-1.49, p=0.01) and PA level positively (slope=3.28, p=0.01) associated with cardiorespiratory fitness. Mean core muscle strength endurance was 78.8 (SD 51.98) seconds. PA level was positively associated with core muscle strength (slope= 8.62, p=0.05). Mean flexibility score was 3.1 (SD 2.36), with age being positively associated with flexibility (slope=0.100, p=0.04). Mean balance was 43.1 (SD 21.09) and 7.7 (SD 5.84) seconds with open and closed eyes respectively. Age was negatively associated with balance (slope = -0.84 (p=0.00)).

Conclusion: The SVMB has made an important step by implementing regular fitness evaluations in their axSpA exercise groups. The test scores of the assessed people with axSpA were lower than in healthy people but within the norms. PA level was positively associated with cardiorespiratory fitness and core muscle strength. Disease duration and disease activity were negatively associated with cardiorespiratory fitness only, but not with the other fitness dimensions, which may be different from what is usually assumed.

REFERENCES:

- [1] Garber CE, et al. *MedSciSportsExerc* 2011;43:1334–59.
- [2] Rausch AK, et al. *AnnRheumDis* 2018; 9(77): 1251-1260.
- [3] Buckley JP. *B J Sports Med*, 2004;38(2):197-205
- [4] Rausch AK, et al. Intra-rater reliability and construct validity of a core strength-endurance test battery in people with axial Spondyloarthritis (manuscript in preparation)
- [5] Jenkinson TR. 1994;21(9):1694-8. Epub 1994/09/01
- [6] Springer BA. *J Ger Phys Ther*. 2007;30(1):8-15

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OP0273-HPR FUNCTIONAL EXERCISE FOR ADULTS WITH CHRONIC NON-SPECIFIC LOW BACK PAIN: A RANDOMIZED CONTROLLED TRIAL

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Background: Exercise therapy is part of the recommendation for the treatment of chronic non-specific low back pain (LBP). Functional exercise may be an alternative for the treatment, no studies assessing its effectiveness were found.

Objectives: To assess the effectiveness of the functional exercise program for pain, functional capacity, general health, kinesiophobia and perceived exertion in adults with chronic nonspecific LBP.

Methods: A randomized controlled clinical trial with intention-to-treat analysis and 24-week follow-up was performed. Eighty-four patients were randomly assigned to an experimental group (EG) or control group (CG). The EG participated in the functional exercises program performed twice a week for twelve weeks. The functional exercise program was composed by global exercise that worked the group of muscles of the trunk and lower and upper limbs with

progression every 4 weeks. The two groups received an informative class on the disease and were advised to use analgesic if necessary. Primary outcome was LBP measured by numeric rating scale (NRS). Secondary outcomes included was functional capacity by Oswestry and Roland Morris questionnaires, 6-minute walk and TUG tests, kinesiophobia (FABQ), general health (SF-36), perceived exertion (BORG). Evaluations were performed at baseline, after 6, 12 (end of intervention) and 24 weeks by a blind evaluator.

Results: The groups were homogeneous for all parameters at baseline. Compared with the CG, the EG statistically improved pain, functional capacity, kinesiophobia, some domains of general health and perceived exertion - Table 1.

Conclusion: The functional exercise program was effective to improve pain, functional capacity, kinesiophobia, general health and perceived exertion in adults with chronic nonspecific LBP.

REFERENCES:

- [1] Hoy D, Bain C, Williams G, March L, Brooks P, Blyth F, et al. A systematic review of the global prevalence of low back pain. *Arthritis and Rheumatism*. 2012.
- [2] Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, et al. What low back pain is and why we need to pay attention. *The Lancet*. 2018.

Abstract OP0273HPR Table 1. Between-groups evaluations

	T0		T6		T12		T24		p Value (GLM)
	EG	CG	EG	CG	EG	CG	EG	CG	
NSR	6.2 (1.3)	6.0 (1.7)	3.1 (1.8)	5.5 (1.7)	2.3 (1.9)	5.5 (1.8)	2.3 (1.8)	5.5 (1.6)	<0.001*
ODI	20.7 (10.8)	25.5 (11.3)	12.0 (7.0)	22.1 (10.3)	9.5 (6.3)	22.5 (10.5)	8.9 (6.4)	22.8 (10.9)	<0.001*
RMDQ	6.9 (5.0)	8.4 (5.3)	4.1 (3.3)	7.6 (4.7)	2.8 (2.6)	7.3 (4.7)	2.6 (2.4)	8.1 (5.2)	<0.001*
TUG	8.3 (1.1)	8.7 (2.6)	8.27 (1.94)	8.69 (1.90)	7.84 (1.08)	8.99 (2.14)	7.86 (0.83)	9.08 (2.49)	0.005*
FABQ work	18.6 (15.7)	17.6 (12.0)	12.4 (9.0)	16.8 (12.0)	10.5 (9.3)	16.6 (11.1)	7.5 (7.4)	17.6 (11.4)	<0.001*
FABQ phys	11.9 (6.2)	13.0 (6.3)	7.1 (6.5)	13.0 (7.1)	7.0 (6.0)	13.2 (7.3)	6.9 (6.1)	13.0 (7.5)	<0.001*
SF-36									
Physical functioning	66.1 (21.3)	60.1 (25.7)	77.7 (16.5)	61.8 (24.2)	83.8 (13.8)	58.2 (26.4)	82.4 (14.3)	60.1 (26.7)	<0.001*
Role physical	55.4 (40.8)	45.8 (39.8)	78.1 (31.2)	48.8 (38.2)	86.3 (24.8)	49.4 (42.9)	87.7 (17.6)	47.0 (39.9)	0.046*
Bodily pain	45.8 (17.0)	40.0 (14.9)	65.1 (19.8)	55.7 (20.4)	76.7 (16.0)	62.0 (21.7)	66.7 (21.6)	61.1 (24.7)	<0.001*
General health	64.8 (21.3)	62.0 (20.1)	68.3 (18.9)	65.6 (17.2)	77.2 (15.6)	62.0 (17.2)	76.0 (15.2)	62.0 (17.4)	<0.001*
Vitality	46.4 (19.1)	48.0 (22.3)	58.8 (17.2)	46.5 (21.2)	64.1 (15.4)	48.6 (18.9)	62.7 (17.6)	47.6 (19.9)	<0.001*
Social functioning	68.6 (24.7)	65.7 (41.8)	80.2 (18.6)	64.8 (25.0)	87.5 (17.0)	69.6 (26.9)	87.4 (17.1)	68.3 (27.1)	<0.001*
Role emotional	55.4 (41.5)	61.7 (41.8)	72.1 (36.8)	55.5 (42.1)	82.4 (29.8)	56.3 (46.3)	82.2 (27.0)	64.2 (43.2)	<0.001*
Borg (0-10)	2.4 (0.9)	2.4 (1.5)	2.17 (1.06)	2.38 (1.01)	1.9 (0.76)	2.60 (1.40)	1.88 (0.77)	2.62 (1.96)	0.012*

Data expressed as mean (standard deviation); GLM, Generalized Linear Models;

*Statistically significant p value (<0.05).

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OP0274-HPR DEVELOPMENT OF GENERIC CORE COMPETENCES OF HEALTH PROFESSIONALS IN RHEUMATOLOGY: A SYSTEMATIC LITERATURE REVIEW INFORMING THE 2018 EULAR RECOMMENDATIONS

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Background: Acquisition and maintenance of competences by Health Professionals in Rheumatology (HPRs) is important to ensure the best care for people with

rheumatic and musculoskeletal diseases (RMDs). HPRs' competencies have never been systematically evaluated, nor international recommendations provided. A EULAR Task Force (TF) was formed for this purpose.

Objectives: To perform a systematic literature review (SLR) on the core competences of HPRs with a focus on nurses, physiotherapists (PT) and occupational therapists (OT) to inform the "EULAR recommendations for the generic core competences of Health Professionals in Rheumatology"

Methods: Thirteen main themes identified by the TF and translated into research questions, formed the basis of the SLR. Existing literature was systematically evaluated using the following databases (PubMed/Medline, Embase, Cochrane library, CENTRAL, Emcare, PsycINFO, Academic Search Premier, Web of Science, Google Scholar, ERIC and National Science Digital Library) from 1/1/1990 to 20/02/2018. Relevant search terms for competences, RMDs and HPRs were used. In addition, EULAR HPR national presidents were invited to share any documents describing HPRs' competences. Inclusion criteria were: studies on competences or roles, knowledge, attitudes, skills or educational needs relevant for the management of people with RMDs, of HPRs in general or specifically of nurses, PTs or OTs, at post-graduate level. Exclusion criteria were: HPRs' competences for children's care or for concurring co-morbidities; extended roles of HPRs; a very specific clinical intervention or an intervention clearly attributable to only one profession or studies written in a language other than English or Dutch. All abstracts were screened to identify eligible studies for full text inclusion. The methodological quality of the studies was scored using appropriate tools (Table).

Author/Year	Type of study	Quality score of papers used*
Bergsten et al. / 2011	Qualitative study (Interviews, grounded theory)	Medium (8)
Rooden et al. / 2015	Questionnaire-based study	High (10)
Barckley et al. / 2012	Systematic review	Moderate (7)
Dates et al. / 2014	Qualitative study (semi-structured interviews)	High (12)
Ervin et al. / 2018 (a)	Qualitative study (face to face groups)	Medium (9)
Ervin et al. / 2018 (b)	Qualitative study (Delphi survey)	High (12)
Health Education England, NHS England Medical Directorate and Skills for Health / 2018	Descriptive Framework informed by Delphi project and focus groups of patients	High (12)
Holland et al. / 2013	Quantitative study (Questionnaire)	83.3%
Hutchings et al. / 2011	Questionnaire-based study	High (10)
Hutchings et al. / 2013	Qualitative study (consensus meetings, face to face group, phone conference)	Low (6)
Larkin et al. / 2013	Qualitative study (Interviews)	High (12)
Little et al. / 2013	Focus groups and Online survey-based study	Low (5)
Lundin et al. / 2009	Qualitative and quantitative arms (Survey and interviews)	62.5%
Maycock / 1991	Opinion paper	NA*
Moore et al. / 2018	Survey-based study	Medium (9)
Tajl et al. / 2006	Review	Critically Low*
Wardlaw et al. / 2016	Qualitative study (Structured interviews and online survey)	High (12)
Williams et al. / 2015	Observational (online survey)	High (12)
Wood et al. / 2007	Descriptive study – recommendations	Low (6)
Zhang et al. / 2015	Recommendations	High (10)

*Scoring of qualitative studies was performed using a modified version of the criteria presented in Harden et al. (BMJ, 2009 Nov 22;339:b2554). Quality is being scored as low, medium or high. Score values (range 1-12) are reported in brackets. *Scoring of reviews was performed using the AMSTAR criteria (Shea B et al. BMJ, 2017 Sep 22;356:e000000). Quality is being scored as critically low, low, moderate and high. *This source has not been scored as this is an opinion paper. *AMSTAR score was used for the quality assessment for quantitative studies or for studies of mixed methods (Jug et al. Int J Nurs Stud, 2009;46:529-546).

Table: Methodological quality assessment of the 20 studies addressing the competences of multiple HPRs (nurses, physical therapists and occupational therapists).

Results: From 591 unique references reviewed, 79 studies were included. Twenty studies addressed competences of multiple HPRs. The methodological quality of most papers was high to medium (Table). The identified studies underpinned a range of HPRs' competences, including: communication skills, promotion of physical activity, basic knowledge about RMDs and education of patients and other health providers. Competences more relevant to specific professions (e.g musculoskeletal system examination skills for PTs and assessment of house and work environment for OTs) were also recorded. Heterogeneity in the HPR desired competences and practice across countries highlighted the need for further education of HPRs to acquire certain competences.

Conclusion: High-quality literature is available on the competences of HPRs for the management of people with RMDs. This literature supports the formulation of evidence-based recommendations for the core competences for HPRs by a EULAR Task Force.

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SLE, Sjögren's and APS – etiology, pathogenesis and animal models

OP0275

THE PI3KΔ INHIBITOR INCB050465 AMELIORATES SALIVARY GLAND PATHOLOGY AND REDUCES AUTOANTIBODY FORMATION IN A MURINE MODEL OF SJÖGREN'S SYNDROME

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Background: Sjögren's syndrome (SS) is a chronic autoimmune exocrinopathy affecting the glands that produce tears, saliva and vaginal and bronchial

secretions. SS represents a complex interaction between the adaptive immune system and specific tissue regions of exocrine glands. Germinal ectopic lymphoid structures that are rich in autoimmune B-cells are thought to play an important role in local chronic B-cell activation and clonal expansion, autoantibody production, and Ig class switching in SS¹. Genetic deletion or pharmacological inhibition of PI3Kδ leads to defective B-cell activation, reduced proliferation and functional suppression. INCB050465, an oral small molecule selective PI3Kδ inhibitor, is currently being evaluated in clinical trials for the treatment of B-cell driven autoimmune diseases: SS and autoimmune hemolytic anemia (NCT03627065 & NCT03538041).

Objectives: To evaluate INCB050465 efficacy as a monotherapy in a spontaneous murine model of Sjögren's syndrome.

Methods: The NOD.SlitLJ mice develop progressive autoimmunity primarily targeting salivary glands that share many disease characteristics with SS. Histological assessment of salivary glands constituted a primary efficacy endpoint. Additional readouts included autoantibody and cytokine quantification in serum and saliva. INCB050465 efficacy was also assessed in a mechanistic dinitrophenol-keyhole limpet hemocyanin (DNP-KLH) mouse model of B-cell activation and *de novo* anti-specific immunoglobulin production. Serum was collected to quantify DNP-specific immunoglobulin levels. Spleen tissue was investigated for B-cell subsets using flow cytometry.

Results: INCB050465 treatment (0.1-1 mg/kg, b.i.d.) dose-dependently ameliorated the severity of salivary gland inflammation (p<0.0001) and reduced circulating levels of anti-SS-related antigen A (anti-SSA/Ro) and anti-SS-related antigen B (anti-SSB/La) (p<0.0001). Reduced lymphocytic infiltration of salivary glands in INCB050465-treated groups coincided with lowered B-cell activating cytokine (BAFF) levels in saliva (p<0.05). In the DNP-KLH model, INCB050465 treatment dose-dependently reduced the proportion of germinal center B-cells (CD19⁺PNA⁺CD95⁺ cell subset) (p<0.0001) and decreased DNP-specific IgM and IgG antibody titers (p<0.0001).

Conclusion: INCB050465 administration ameliorated germinal center formation, inhibited salivary gland inflammation and reduced autoantibody titers as a single agent in a dose-dependent manner. Together, the data suggest that INCB050465, a selective PI3Kδ inhibitor, may have potential as a therapeutic agent for the treatment of Sjögren's syndrome.

REFERENCE:

- [1] Salomonsson, et al. Cellular basis of ectopic germinal center formation and autoantibody production in the target organ of patients with Sjögren's syndrome. *Arthritis Rheum.* 2003; 48(11): 3187-3201.

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