The course of VO2 max overtime was independently associated with pre-rehabilitation BMI, waist circumference, muscle mass of total body, arms and legs, fat mass, body fat, the fat mass index and TST, as well as with change of BMI, waist circumference, fat mass and the fat mass index between pre-rehabilitation and after 3 and 12 months.

Conclusion: We observed benefits of intervention with a team-rehabilitation program for 4 weeks on body composition profile, functioning, physical limitation and cardiorespiratory fitness, which were presented beyond the time of the rehabilitation period for up to 12 months. Different aspects of body composition and physical capacity were associated with levels of disability measured with HAQ and with cardiorespiratory fitness. This study indicates that in patients with inflammatory arthritis, muscle mass and strength were linked to HAQ over time, whereas the measures of body composition could be more linked to cardiorespiratory fitness than to HAQ.

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HPR Interventions (educational, physical, social and psychological)

SAT0613-HPR EFFECT OF CERVICAL STABILIZATION EXERCISES ON CERVICAL POSITION ERROR IN PATIENTS WITH SPONDYLOARTHRITIS: A RANDOMIZED CONTROLLED TRIAL

H. E. Oz¹, D. Bayraktar², M. Kara¹, D. Solmaz¹, S. Akar¹. ¹Izmir Katip Celebi University, Faculty of Medicine, Department of Internal Medicine, Division of Rheumatology, Izmir, Turkey; ²Izmir Katip Celebi University, Faculty of Health Sciences, Department of Physiotherapy and Rehabilitation, Izmir, Turkey

Background: Proprioception sense might be deteriorated due to joint related diseases. Different exercise programs were shown beneficial for improving proprioception sense. However, the effect of exercise on cervical position error was not investigated in patients with axial spondyloarthritis (axSpA).

Objectives: To investigate the effect of cervical stabilization exercises on cervical position error in patients with axSpA.

Methods: Thirty-nine patients with axSpA were randomly allocated into two groups as exercise group (n: 20, 11 males) and control group (n: 19, 12 males). All patients were evaluated regarding to physical characteristics (age, body-mass index), disease activity (Bath Ankylosing Spondylitis Disease Activity Index), functional status (Bath Ankylosing Spondylitis Functional Index), and spinal mobility (Bath Ankylosing Spondylitis Metrology Index). Cervical position error was evaluated in flexion, extension, rotation and lateral flexion directions and was calculated using a special formula (1). All evaluations were performed at baseline and after six weeks. Exercise group performed a progressive home-based cervical stabilization exercise program, while the control group did not receive any exercise intervention. Exercise adherence control and exercise progression was delivered by sending messages and video instructions via a freeware and cross-platform messaging service (WhatsApp Messenger) in a weekly basis.

Results: Baseline physical and disease related characteristics were similar between groups ($p > 0.05$, table 1). Exercise group showed significant improvements in all directions related to cervical proprioception following six weeks ($p < 0.05$, Table 2), however, no improvements were observed in the control group ($p > 0.05$, Table 2).

Table 1. Comparison of the Groups at Baseline

	Exercise Group (n: 20) Median (IQR 25/75)	Control Group (n: 19) Median (IQR 25/75)	p*
Physical Characteristics			
Age (years)	40.5 (36.0/52.5)	44.0 (39.0/49.5)	0.496
Body-Mass Index (kg/m ²)	27.5 (24.5/30.2)	26.8 (23.6/29.3)	0.569
Disease Related Characteristics			
BASDAI (score)	2.0 (1.0/3.3)	1.8 (1.3/2.5)	0.687
BASMI Total (score)	2.9 (1.7/4.1)	2.3 (1.8/3.1)	0.127
BASFI (score)	1.8 (0.6/2.9)	1.2 (1.0/2.2)	0.496

*Mann-Whitney U Test, IQR 25/75: Interquartile range 25/75, BASDAI: Bath Ankylosing Spondylitis Disease Activity Index, BASMI: Bath Ankylosing Spondylitis Metrology Index, BASFI: Bath Ankylosing Spondylitis Functional Index, $p < 0.05$.

Table 2. In-Group Comparison of Cervical Position Sense Error

	Before Median (IQR 25/75)	After Median (IQR 25/75)	p*
Exercise Group (n: 20)			
Flexion (°)	4.9 (2.2/7.0)	2.8 (1.7/3.8)	0.033
Extension (°)	4.5 (3.3/6.4)	3.1 (1.8/4.8)	0.040
Right Rotation (°)	5.2 (3.0/8.9)	3.7 (1.9/4.7)	0.006
Left Rotation (°)	4.3 (2.5/5.0)	2.8 (2.2/3.3)	0.017
Right Lateral Flexion (°)	4.9 (3.3/6.8)	2.3 (1.8/3.7)	0.009
Left Lateral Flexion (°)	4.3 (2.1/6.7)	2.0 (1.5/3.4)	0.010
Control Group (n: 19)			
Flexion (°)	6.3 (3.5/7.3)	5.2 (3.8/7.0)	0.856
Extension (°)	5.5 (4.5/7.3)	4.1 (3.3/8.2)	0.809
Right Rotation (°)	6.4 (4.3/9.0)	5.5 (3.0/8.5)	0.472
Left Rotation (°)	5.4 (3.5/7.9)	5.0 (3.5/7.2)	0.778
Right Lateral Flexion (°)	5.9 (3.6/8.4)	4.3 (2.7/7.7)	0.717
Left Lateral Flexion (°)	3.8 (2.4/5.6)	4.9 (2.9/5.7)	0.904

*Wilcoxon Signed Rank Test, IQR 25/75: Interquartile range 25/75, °: degree, $p < 0.05$.

Conclusion: A six-week cervical stabilization exercise program is beneficial for impaired cervical proprioception sense in patients with axSpA.

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- [1] Dugaill P-M, De Santis R, Tits M, Sobczak S, Vigne A, Feipel V. Head repositioning accuracy in patients with neck pain and asymptomatic subjects: concurrent validity, influence of motion speed, motion direction and target distance. *European Spine Journal*. 2015;24:2885-2891.

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SAT0614-HPR IDENTIFYING AND OPTIMISING MULTIPLE INTERVENTION COMPONENTS AND THEIR DELIVERY WITHIN A SELF-MANAGEMENT SMARTPHONE APP FOR PEOPLE WITH SJÖGREN'S SYNDROME: A QUALITATIVE STUDY

C. Mccallum¹, M. Campbell², J. Vines¹, T. Rapley¹, K. Hackett¹. ¹Northumbria University, Newcastle upon Tyne, United Kingdom; ²Teesside University, Middlesbrough, United Kingdom

Background: Sjögren's syndrome (SS) is an autoimmune rheumatic disease with diverse symptoms including mental and physical fatigue, dryness, pain and sleep disturbances. These symptoms are interconnected and rarely occur in isolation. Improving symptoms and quality of life requires people with SS to navigate multiple interventions and engage in self-management. Smartphone applications (apps) can deliver multiple cognitive and behaviour-based interventions in users' everyday daily lives and are readily accessible. However, delivering several therapeutic interventions together within a single coherent self-management app requires systematic and evidence-based selection of intervention components, and an understanding of existing self-management approaches and their associated challenges for those living with SS.

Objectives: To identify theory-based intervention components for inclusion in a SS self-management app. To understand the self-management approaches and challenges of those living with SS to inform in-app component delivery.

Methods: First, to identify intervention components within the app, existing interventions that target each symptom of fatigue, dryness, pain, sleep disturbance were identified through a literature search. Their content was coded by the research team using behaviour change techniques and the Theoretical Domains Framework¹. The content was grouped to form five intervention components which target multiple symptoms.

Second, to understand SS self-management approaches and challenges, 13 people living with SS took part in a series of qualitative focus groups (n=6) and design workshops (n=7). Focus groups involved participants discussing their own self-management experiences and approaches (e.g. when and how they employed a variety of techniques). In design workshops participants sketched metaphors to explain these experiences and used craft materials to create "Magic Machines"² addressing their self-management challenges. Focus groups and design workshops were audio-recorded, transcribed, thematically analysed as a single data set, and findings mapped to the self-determination theory³ dimensions of capability, autonomy, and relatedness.

Results: Intervention components identified were: i) SS psychoeducation, ii) relaxation techniques, iii) activity pacing and goal setting, iv) assertiveness and communication skills, and v) sleep and dryness tips. Participants tackled complex symptom patterns (i.e. symptom interrelatedness and flares) using different self-management approaches; reactively (focusing on the most severe symptom) or systematically (one symptom at a time). Knowing which intervention techniques to choose was felt to be challenging; however the availability of multiple interventions techniques provided a sense of optimism