

SUPPLEMENTARY DATA

Supplementary Table 1. Baseline clinical characteristics for 3 groups of patients with axSpA whose baseline and follow-up MRI scans (n=25 each) were assessed for A. BME and B. Structural lesions in the SIJ using the SPARCC methods in 3 reading exercises after each stage of calibration by 17 readers from the EuroSpA Consortium.

A.

	Cases from whom MRI scans were used to score SIJ BME		
	Stage 1 (n=25)	Stage 2 (n=25)	Stage 3 (n=25)
Age, Mean (SD)	35.8 (10.8)	33.2 (8.9)	34.2 (9.7)
Males, N (%)	21 (84%)	17 (68%)	18 (72%)
Symptom Duration Years, Mean (SD)	14.2 (10.0)	11.6 (7.5)	11.7 (6.8)
On biologic therapy, N (%)	21 (84%)	19 (76%)	19 (76%)
HLA-B27 Pos, N (%)	21 (84%)	20 (80%)	21 (84%)
IBD Pos, N (%)	3 (12%)	5 (20%)	3 (12%)
Psoriasis, N (%)	3 (12%)	4 (16%)	3 (12%)
Uveitis, N (%)	8 (32%)	9 (36%)	6 (24%)
mSASSS, mean (SD)	9.4 (10.9)	7.20 (9.9)	6.7 (11.3)

B.

	Cases from whom MRI scans were used to score SIJ structural lesions		
	Stage 1 (n=25)	Stage 2 (n=25)	Stage 3 (n=25)
Age, Mean (SD)	32.56 (9.2)	35.84 (9.6)	34.84 (11.3)

Males, N (%)	16 (64%)	20 (80%)	19 (76%)
Symptom Duration Years, Mean (SD)	10.33 (7.8)	13.08 (6.6)	13.17 (9.8)
On biologic therapy, N (%)	21 (84%)	18 (72%)	18 (72%)
HLA-B27 Pos, N (%)	21 (84%)	19 (76%)	21 (84%)
IBD Pos, N (%)	3 (12%)	3 (12%)	4 (16%)
Psoriasis, N (%)	2 (8%)	4 (16%)	3 (12%)
Uveitis, No. (%)	5 (20%)	11 (44%)	6 (24%)
mSASSS, mean (SD)	6.7 (10.2)	6.1 (7.0)	9.2 (12.8)

Supplementary Table 2. Time in minutes expended by SPARCC developers and EuroSpA readers for the paired evaluation of baseline and follow up MRI scans of each individual case using the SPARCC SIJ scoring methods for A. BME and B. structural lesions in 3 sets of patients with axSpA (n=25 per set)

A. SPARCC BME

Readers	Mean	SD	Median	IQR	Range	
Stage 1						
All	7.8	6.6	5.9	5.8	0.7	44.1
SPARCC developers	5.8	4.4	3.7	5.4	0.7	18.6
EuroSpA readers	8	6.7	6.1	6.1	0.9	44.1

Strategy A readers	7.9	6.4	6.1	5.5	1.2	44.1
Strategy B readers	8.1	7	6.1	6.4	0.9	43.7
Stage 2						
All	7.2	6.3	5.6	4.4	0.9	56.3
SPARCC developers	5.9	3.4	4.5	3.6	1.8	15.3
EuroSpA readers	7.3	6.5	5.7	4.4	0.9	56.3
Strategy A readers	6.4	4.5	5.4	3.9	1.1	33.8
Strategy B readers	8.2	7.8	6.3	4.8	0.9	56.3
Stage 3						
All	5.5	3.3	4.7	3.8	0.7	19.1
SPARCC developers	5.8	4	4.4	3.2	1.7	19.1
EuroSpA readers	5.4	3.2	4.7	3.9	0.7	18.3
Strategy A readers	5.1	2.8	4.5	3.7	0.7	15
Strategy B readers	5.7	3.4	4.8	3.8	0.9	18.3

All	8.4	5.9	6.7	4.6	1.3	43.3
SPARCC developers	11.8	8	8.7	7.6	4.5	38.2
EuroSpA readers	7.6	4.9	6.4	4.6	1.3	43.3
Strategy A readers	7.7	6.1	6.1	4.8	1.3	43.3
Strategy B readers	7.5	3.7	6.4	4.4	2.1	19.6

Supplementary Table 3. System Usability Scores for 17 EuroSpA readers rating the SPARCC-SIJ_{RETIC-INF}, SPARCC-SIJ_{RETIC-STR} Modules and the SPARCC SIJ scoring methods for inflammation and structural lesions.

Reader	SPARCC-SIJ_{RETIC-INF} Module SUS Score	SPARCC-SIJ_{RETIC-STR} Module SUS Score	SPARCC SIJ Inflammation Method SUS Score	SPARCC SIJ Structural Lesion Method SUS Score
1	82.5	62.5	67.5	72.5
2	42.5	57.5	45	65
3	77.5	80	85	82.5
4	95	87.5	82.5	95
5	82.5	72.5	85	87.5
6	82.5	75	67.5	60
7	85	82.5	92.5	87.5

8	57.5	55	55	55
9	80	67.5	87.5	70
10	70	67.5	65	57.5
11	75	72.5	72.5	77.5
12	95	95	92.5	100
13	57.5	27.5	65	30
14	60	72.5	82.5	77.5
15	75	62.5	77.5	77.5
16	90	80	82.5	77.5
17	85	90	100	85

Supplementary Figure 1. ICC values for pairs of readers scoring baseline to follow up change in SPARCC erosion scores of stage 3 cases according to prior experience in the use of the SPARCC MRI Sacroiliac Joint Structural method.

No experience							
	Reader 2	SPARCC 1	Reader 3	SPARCC 2	Reader 4	Reader 5	Reader 6
Reader 1	0.19	0.45	0.72	0.46	0.32	0.24	0.51
Reader 6	0.42	0.33	0.59	0.36	0.42	0.37	
Reader 5	0.5	0.48	0.32	0.41	0.23		
Reader 4	0.48	0.4	0.48	0.28			
SPARCC 2	0.34	0.75	0.31				
Reader 3	0.37	0.33					
SPARCC 1	0.27						
Intermediate experience							
	SPARCC 1	SPARCC 2	Reader 7	Reader 8	Reader 9	Reader 10	Reader 11
Reader 12	0.06	0.13	0.04	0.16	0.23	0.22	0.25
Reader 11	0.38	0.37	0.5	0.31	0.4	0.33	
Reader 10	0.6	0.6	0.33	0.32	0.59		
Reader 9	0.48	0.68	0.31	-0.11			
Reader 8	0.23	0.68	0.35				
Reader 7	0.48	0.68					
SPARCC 2	0.75						
Experienced							
	SPARCC 1	Reader 14	Reader 15	SPARCC 2	Reader 16	Reader 17	
Reader 13	0.02	0.28	0.14	0.09	-0.01	0.51	
Reader 17	0.12	0.5	0.34	0.27	0.08		
Reader 16	0.22	0.08	0.39	0.28			
SPARCC 2	0.75	0.57	0.56				
Reader 15	0.44	0.47					
Reader 14	0.75						

SPARCC 1, SPARCC 2: SPARCC developer readers

*ICC values that do not include data from SPARCC developers