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**Appendix Table I** Standardized pulse sequence parameters used in our study for obtaining advanced MARS-MRI of shoulder arthroplasty at 1.5 Tesla.

Sequence Parameters	TSE		Axial PD CS-SEMAC	CS-SEMAC TSE				
	Axial PD	Axial STIR		Axial STIR	Coronal PD	Coronal	Sagittal PD	Sagittal
Acceleration factor	2	2	8	8	8	8	8	8
Concatenations	2	2	1	1	1	1	1	1
Echo spacing [ms]	5.76	5.78	6.56	7.54	8.08	7.54	8.08	7.54
Echo time [ms]	35	5.8	33	7.5	24	7.5	24	7.5
Echo train length	13	7	11	19	11	19	11	19
Field-of-view [mm]	180 × 180	200 × 200	180 × 180	200 × 200	250 × 218	250 × 218	250 × 218	250 × 218
Flip angle [degree]	160	170	150	150	150	150	150	150
Imaging time [min:sec]	3:38	3:04	4:31	4:13	4:48	3:52	4:45	3:44
Interslice gap [mm]	0	0	0	0	0	0	0	0
Inversion time [ms]	NA	150	NA	160	NA	160	NA	160
Matrix	488 × 256	256 × 180	320 × 224	256 × 204	320 × 224	256 × 208	320 × 224	256 × 208
No. of excitations	2	3	1	1	1	1	1	1
No. of slices	65	49	35	19	29	17	31	19
Phase encoding direction	Column	Column	Column	Column	Row	Row	Row	Row

Phase oversampling [%]	25	20	30	70	80	100	75	60
Receiver bandwidth [Hz/pixel]	500	590	601	501	601	501	601	501
Repetition time [ms]	4760	3610	3500	5850	3450	5240	3500	5850
SEMAC steps	NA	NA	21	19	19	19	19	19
Slice thickness [mm]	3	4	3	4.5	3	4	3	4.5

CS-SEMAC, compressed sensing slice encoding with metal artifact correction; NA, not applicable; PD, proton density, SEMAC, slice encoding with metal artifact correction; STIR, short tau inversion recovery; TSE, turbo spin echo pulse sequence.

**Appendix Table II** Image quality evaluation of participants' advanced MARS-MRI studies\*

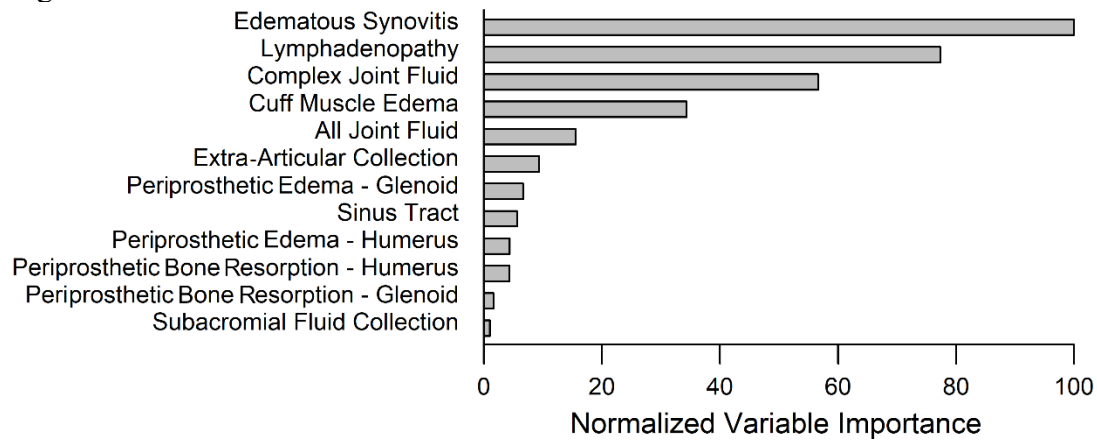
Parameter	$\kappa$ (95% CI)			Consensus Score <sup>†</sup>
	Intrareader 1 Agreement	Intrareader 2 Agreement	Inter-reader Agreement	
Motion artifact	0.91 (0.83–1.0)	0.94 (0.88–1.0)	0.83 (0.66–0.98)	5 (2, 4–5, 5)
Metal artifact reduction	0.96 (0.91–1.0)	0.93 (0.87–0.99)	0.75 (0.62–0.91)	4 (3, 4–5, 5)
Overall image quality	0.94 (0.88–1.0)	0.92 (0.86–0.98)	0.71 (0.55–0.87)	4 (3, 4–5, 5)

CI, confidence interval.

\*The degrees of motion artifact, metal artifact reduction, and overall image quality were assessed using 5-point symmetrical equidistant Likert scales. A score of 1 (“nondiagnostic”) indicated complete obscuration of anatomic details and imaging findings; a score of 2 (“moderate” or “bad”) indicated obscuration of most anatomic details and imaging findings; a score of 3 (“mild” or “adequate”) indicated obscuration of only fine anatomic details; a score of 4 (“minimal” or “good”) indicated only minimal obscuration of fine anatomic details; and a score of 5 (“absent” or “excellent”) indicated full visibility of anatomic details.

<sup>†</sup>Likert scale gradings are expressed as follows: median (minimum, first–third quartiles, maximum). The first and third quartile values represent the boundaries of the central 50% of values and, together with the minimum and maximum value, give the information of a box-and-whisker plot.

Appendix Figure 1. Random forest analysis for determining the relative importance of advanced MARS-MRI findings for PSI diagnosis.



Appendix Figure 2. Least absolute shrinkage and selection operator (LASSO) logistic regression analysis for determining the most appropriate MARS-MRI findings for the optimal predictive model for PSI diagnosis.

