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Appendix

TABLE E-1 Magnetic Resonance Imaging Protocol at Each Participating Institution*

Institution	View	Sequence	TE *(ms)*	TR *(ms)*	ETL	NEX	Slice FOV *(%)*	FOV *(cm)*	Phase Matrix	Freq. Matrix
A	C-spine T2 sag	FSE	100	5,000	24	2	4	24	192	256
	C-spine T1 sag	FSE	Min. full (10)	460	2	2	4	24	192	256
	C-spine T2 ax	FSE	102	5,000	16	2	5	16	192	256
B	C-spine T2 sag	FSE	108	4,000	17	2	4	25	224	320
	C-spine T1 sag	FSE	10	500	7	5	4	25	224	320
	C-spine T2 ax	FSE	90	4,000	23	2	4	14	160	208
C	C-spine T2 sag	FSE	100	5,000	24	2	4	24	208	256
	C-spine T1 sag	FSE	8.2	380	4	2	4	24	208	256
	C-spine T2 ax	FSE	102	5,000	20	2	5	16	224	256
D	C-spine T2 sag	FSE	95	3,000	25	4	4	24	224	320
	C-spine T1 sag	T1 FLAIR	Min. full	1,750	10	3	4	24	192	320
	C-spine T2 ax	FSE	85	2,000	12	4	4	16	192	288
E	C-spine T2 sag	FSE	100	5,000	24	2	4	24	208	256
	C-spine T1 sag	FSE	8.2	380	4	2	4	24	208	256
	C-spine T2 ax	FSE	102	5,000	20	2	5	16	224	256
F	C-spine T2 sag	TSE	100	3,000	26	1	3	24	210	304
	C-spine T1 sag	TSE	15	570	3	1	3	24	152	256
	C-spine T2 ax	TSE	90	4,400	26	1	3.5	16	228	304
G	C-spine T2 sag	FSE	101	5,000	24	2	4	24	224	320
	C-spine T1 sag	FSE	9.2	400	2	2	4	24	192	256
	C-spine T2 ax	FSE	93	5,000	11	2	5	16	192	256
H	C-spine T2 sag	FSE	96	3,000	15	2	4.5	32	256	512
	C-spine T1 sag	FSE	9.2	500	3	2	4.5	32	314	448
	C-spine T2 ax	FSE	93	4,500	14	2	3.5	20	269	384

*TE = echo time, TR = repetition time, ETL = echo train length, NEX = number of excitations, FOV = field of view, freq. = frequency, sag = sagittal, ax = axial, FSE = fast-spin-echo, FLAIR = fluid-attenuated inversion recovery, and TSE = turbo-spin-echo.

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TABLE E-2 MRI Findings by Grade and Age Group for a Total of 1,158 Discs at Baseline and at the Time of Follow-up in the Current Study*

	Age Group									
	30-39 Yr (168 Discs)		40-49 Yr (252 Discs)		50-59 Yr (282 Discs)		60-69 Yr (210 Discs)		≥70 Yr (246 Discs)	
	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up	Baseline	Follow-up
DSI										
Grade 0	152 (90.5)	45 (26.8)	215 (85.3)	56 (22.2)	212 (75.2)	22 (7.8)	116 (55.2)	13 (6.2)	57 (23.2)	3 (1.2)
Grade 1	16 (9.5)	122 (72.6)	37 (14.7)	196 (77.8)	70 (24.8)	246 (87.2)	94 (44.8)	174 (82.9)	189 (76.8)	172 (69.9)
Grade 2	0	1 (0.6)	0	0	0	14 (5.0)	0	23 (11.0)	0	71 (28.9)
AC										
Grade 0	168 (100)	137 (81.5)	243 (96.4)	149 (59.1)	272 (96.5)	168 (59.6)	177 (84.3)	108 (51.4)	190 (77.2)	98 (39.8)
Grade 1	0	20 (11.9)	5 (2.0)	79 (31.3)	10 (3.5)	89 (31.6)	32 (15.2)	77 (36.7)	56 (22.8)	111 (45.1)
Grade 2	0	11 (6.5)	4 (1.6)	24 (9.5)	0	25 (8.9)	1 (0.5)	25 (11.9)	0	36 (14.6)
Grade 3	0	0	0	0	0	0	0	0	0	1 (0.4)
Grade 4	0	0	0	0	0	0	0	0	0	0
PDP										
Grade 0	168 (100)	137 (81.5)	243 (96.4)	153 (60.7)	272 (96.5)	163 (57.8)	180 (85.7)	108 (51.4)	194 (78.9)	102 (41.5)
Grade 1	0	20 (11.9)	5 (2.0)	76 (30.2)	10 (3.5)	95 (33.7)	29 (13.8)	77 (36.7)	52 (21.1)	112 (45.5)
Grade 2	0	11 (6.5)	4 (1.6)	23 (9.1)	0	24 (8.5)	1 (0.5)	25 (11.9)	0	32 (13.0)
DSN										
Grade 0	168 (100)	166 (98.8)	252 (100)	249 (98.8)	282 (100)	273 (96.8)	210 (100)	202 (96.2)	239 (97.2)	221 (89.8)
Grade 1	0	1 (0.6)	0	3 (1.2)	0	9 (3.2)	0	7 (3.3)	7 (2.8)	24 (9.8)
Grade 2	0	1 (0.6)	0	0	0	0	0	1 (0.5)	0	1 (0.4)
FS										
Grade 0	168 (100)	167 (99.4)	252 (100)	248 (98.4)	282 (100)	276 (97.9)	209 (99.5)	193 (91.9)	244 (99.2)	185 (75.2)
Grade 1	0	1 (0.6)	0	4 (1.6)	0	6 (2.1)	1 (0.5)	17 (8.1)	2 (0.8)	61 (24.8)

*The values are given as the number of discs, with the percentage in parentheses. DSI = decrease in signal intensity of the intervertebral disc, AC = anterior compression of the dura and spinal cord, PDP = posterior disc protrusion, DSN = disc-space narrowing, and FS = foraminal stenosis.