

### Supplement file

Supplement table 1

Men	L1/L2 (n=500)	L2/L3 (n=500)	L3/L4 (n=500)	L4/L5 (n=500)	$\Sigma$ L1-L4 (n=2000)
G=1	91	147	168	198	604 (30.2%)
G=2	22	38	27	70	157 (7.9%)
G=3	5	9	16	27	57 (2.9%)
$\Sigma$ G1- G3	118	194	211	295	818 (40.9%)
$\Sigma$ G2- G3	27	47	43	97	214 (10.7%)
Women	L1/L2 (n=500)	L2/L3 (n=500)	L3/L4 (n=500)	L4/L5 (n=500)	$\Sigma$ L1-L4 (n=2000)
G=1	96	144	173	174	587 (29.4%)
G=2	19	56	51	126	252 (12.6%)
G=3	8	18	14	36	76 (3.8%)
$\Sigma$ G1- G3	123	218	238	336	915 (45.8%)
$\Sigma$ G2- G3	27	74	65	162	328 (16.4%)

The results in this supplement table 1 are the grading results carried out by reader 2, including 500 males and 500 females, selected sequentially such that one of every four radiographs was read. The prevalence of grade 1 disc space narrowing was slightly more common in men (30.2% vs 29.4%), and the prevalence of  $\geq$  grade 2 disc space narrowing was more common in women (16.4% vs 10.7%), the overall  $\geq$  grade 1 disc space narrowing was more common in women (45.8.0% vs 40.0%).  $\Sigma$ L1-L4: sum of the four disc levels L1/L2 to L4/L5.

Supplement table 2: Disc space narrowing score in three age groups (mean±SD of L1/L2-L4/L5).

	65~69 (yrs)	70~79 (yrs)	≥80 (yrs)	P-value for trend
Male:	1.959±1.849 (n=172)	2.191±2.134 (n=293)	3.229±3.107 (n=35)	P=0.001
Female:	2.164±1.914 (n=165)	2.620±2.188 (n=284)	4.275±3.001 (n=51)	P<0.001
Male Female difference	0.205	0.429	1.046	

The results in this supplement table 1 are the grading results carried out by reader 2, including 500 males and 500 females, selected sequentially such that one of every four radiographs was read. DSN severity throughout the lumbar spine increased with increasing age in both men and women (P<0.001). The difference in DSN score between males and females also increased with increasing age, being 0.205, 0.429, and 1.046 respectively in the three different age groups.

Supplement table 3a, Prevalence of disc space narrowing in each level for men and women at the age group of 65-69 years

Men	L1/L2 (n=662)	L2/L3 (n=662)	L3/L4 (n=662)	L4/L5 (n=662)	$\Sigma$ L1-L4 (n=2648)
G=1	130	187	244	271	832 (31.4%)
G=2	27	50	51	142	270 (10.2%)
G=3	5	9	13	36	63 (2.4%)
$\Sigma$ G1-G3	162 (24.5%)	246 (37.2%)	308 (46.5%)	449 (67.8%)	1165 (44.0%)
$\Sigma$ G2-G3	32 (4.8%)	59 (8.9%)	64 (9.7%)	178 (26.9%)	333 (12.6%)
Women	L1/L2 (n=668)	L2/L3 (n=668)	L3/L4 (n=668)	L4/L5 (n=668)	$\Sigma$ L1-L4 (n=2672)
G=1	134	192	235	237	798 (29.9%)
G=2	17	69	74	171	331 (12.4%)
G=3	3	9	13	40	65 (2.4%)
$\Sigma$ G1-G3	154 (23.1%)	270 (40.4%)	322 (48.2%)	448 (67.1%)	1194 (44.7%)
$\Sigma$ G2-G3	20 (3.0%)	78 (11.7%)	87 (13.0%)	211 (31.6%)	396 (14.8%)

G=1, 2, 3: grade 1 grade 2 and grade 3 disc space narrowing respectively.  $\Sigma$ L1-L4: sum of the four disc levels L1/L2 to L4/L5.

Supplement table 3b, Prevalence of disc space narrowing in each level for men and women at the age group of 70-79 years.

Men	L1/L2 (n=1152)	L2/L3 (n=1152)	L3/L4 (n=1151)	L4/L5 (n=1152)	$\Sigma$ L1-L4 (n=4607)
G=1	291	366	404	427	1488 (32.3%)
G=2	54	88	109	322	573 (12.4%)
G=3	9	31	47	105	192 (4.2%)
$\Sigma$ G1-G3	354 (30.7%)	485 (42.1%)	560 (48.7%)	854 (74.1%)	2253 (48.9%)
$\Sigma$ G2-G3	63 (5.5%)	119 (10.3%)	156 (13.6%)	427 (37.1%)	765 (16.6%)
Women	L1/L2 (n=1113)	L2/L3 (n=1113)	L3/L4 (n=1112)	L4/L5 (n=1113)	$\Sigma$ L1-L4 (n=4451)
G=1	240	346	370	364	1320 (29.7%)
G=2	77	143	161	352	733 (16.5%)
G=3	34	56	57	107	254 (5.7%)
$\Sigma$ G1-G3	351 (31.5%)	545 (49.0%)	588 (52.9%)	823 (73.9%)	2307 (51.8%)
$\Sigma$ G2-G3	111 (10.0%)	199 (17.9%)	218 (19.6%)	459 (41.2%)	987 (22.2%)

G=1, 2, 3: grade 1 grade 2 and grade 3 disc space narrowing respectively.  $\Sigma$ L1-L4: sum of the four disc levels L1/L2 to L4/L5.

Supplement table 3c, Prevalence of disc space narrowing in each level for men and women aged 80 years or above.

Men	L1/L2 (n=184)	L2/L3 (n=184)	L3/L4 (n=184)	L4/L5 (n=184)	$\Sigma$ L1-L4 (n=736)
G=1	55	61	70	66	252 (34.2%)
G=2	14	18	27	56	115 (15.6%)
G=3	6	12	12	25	55 (7.5%)
$\Sigma$ G1-G3	75 (40.8%)	91 (49.5%)	109 (59.2%)	147 (79.9%)	422 (57.3%)
$\Sigma$ G2-G3	20 (10.9%)	30 (16.3%)	39 (21.2%)	81 (44.0%)	170 (23.1%)
Women	L1/L2 (n=216)	L2/L3 (n=216)	L3/L4 (n=216)	L4/L5 (n=216)	$\Sigma$ L1-L4 (n=864)
G=1	73	74	68	54	269 (31.1%)
G=2	24	40	46	66	176 (20.4%)
G=3	14	24	27	46	111 (12.8%)
$\Sigma$ G1-G3	111 (51.4%)	138 (63.9%)	141 (65.3%)	166 (76.9%)	556 (64.4%)
$\Sigma$ G2-G3	38 (17.6%)	64 (29.6%)	73 (33.8%)	112 (51.9%)	287 (33.2%)

G=1, 2, 3: grade 1 grade 2 and grade 3 disc space narrowing respectively.  $\Sigma$ L1-L4: sum of the four disc levels L1/L2 to L4/L5.