

1 **Supplementary Table A: Prevalence of disc degeneration in people who do not have low back pain**

Reference	Population studied	Numbers of subjects (number male)	Mean age (range)	Number of discs examined per person	MRI index of degeneration	Grade of degeneration	Prevalence % (95% CI)
Beattie et al, 1994 <sup>32</sup>	Healthy women with “no significant back pain”	20 (0)	24 (20-30)	3	Reduced signal intensity	Present	40% (19%-64%)
Boden et al, 1990 <sup>33</sup>	Volunteers with no history of LBP lasting > 24 hours or leading to absence from work, or of sciatica	67 (30)	42 (20-80)	5	Reduced disc height and reduced signal intensity	Present	54% (41%-66%)
Boos et al, 1995 <sup>20</sup>	Volunteers from trauma clinic who had never consulted or been absent from work because of LBP	46 (34)	36 (20-50)	5	Grading system of Pearce et al <sup>†</sup>	Present	85% (71%-94%)
Carragee et al, 2000 <sup>34</sup>	Volunteers from cervical surgery and chronic pain services with no history of LBP	26 (18)	44 (29-56)	1-4 (mean = 3)	Unclear	Moderate or severe	81% (61%-94%)
Chung et al, 2004 <sup>35</sup>	Volunteers with no history of LBP or related complaints	59 (28)	42 (20-75)	5	Reduced disc height and reduced signal intensity	Present	7 % (2%-17%)
Healey et al, 1996 <sup>36</sup>	Asymptomatic athletes	19 (19)	53 (41-69)	5	Reduced disc height and reduced signal intensity	Present	79% (54%-94%)
Jarvik et al, 2001 <sup>16</sup>	Patients with no LBP in the past 4 months that was more than mildly bothersome	148 (131)	54 (36 -71)	5	Reduced disc height Reduced signal intensity	Present Moderate or severe	56% (48%-64%) 83% (77%-89%)
Kjaer et al, 2005 <sup>6</sup>	Volunteers from general population with no LBP in past year	128 (NA*)	40 (40-40)	5	Reduced disc height Reduced signal intensity	Present Present	38% (29%-46%) 30% (22%-38%)
Luoma et al, 2000 <sup>8</sup>	Volunteers from three occupations with no LBP in the past year	37 (37)	NA* (40-45)	4	Reduced signal intensity	Present	76% (59%-88%)
Paajanen et al, 1989 <sup>37</sup>	Military conscripts with no history of LBP	34 (34)	20 (NA*)	5	Reduced signal intensity	Present	35% (20%-54%)

Paajanen et al, 1997 <sup>38</sup>	Asymptomatic controls	136 (NA*)	NA* (20-49)	NA*	Reduced signal intensity	Present	56% (47%-64%)
Ranson et al, 2005 <sup>39</sup>	Fast bowlers with no LBP in past 3 months	36 (36)	26 (NA*)	5	Reduced disc height or reduced signal intensity	Severe	33% (19%-51%)
Salminen et al, 1999 <sup>23</sup>	Schoolchildren with no history of LBP	19 (NA*)	18 (18-18)	5	Reduced disc height Reduced signal intensity	Present Present	11% (1%-33%) 37% (16%-62%)
Savage et al, 1997 <sup>7</sup>	Volunteers from 5 occupations with no LBP in past year	70 (70)	NA* (≥20-≤58)	5	Reduced signal intensity	Present	30% (20%-42%)
Swärd et al, 1991 <sup>5</sup>	Elite gymnasts and non-athletes with no history of LBP	15 (15)	(≥19-≤29)	7-12	Reduced signal intensity (thoraco-lumbar spine)	Present	27% (8%-55%)
Stadnik et al, 1998 <sup>40</sup>	Volunteers referred for head and neck imaging with no LBP or sciatica in past 6 months	36 (20)	42 (17-71)	3	Reduced disc height and reduced signal intensity	Severe	56% (38%-72%)
Visuri et al, 2005 <sup>24</sup>	Male conscripts who had never had LBP	90 (90)	20 (18-26)	5	Reduced disc height and reduced signal intensity	Present (but ?excluding cases who also had disc protrusion or more severe herniation)	21% (13%-31%)
Weishaupt et al, 1998 <sup>18</sup>	Volunteers referred for non-spinal imaging who had never consulted or been absent from work because of LBP	60 (30)	35 (20-50)	5	Reduced signal intensity	Moderate or severe	72% (59%-83%)
Powell et al, 1986 <sup>41</sup>	Obstetric and gynaecological patients with no spinal symptoms	273 (0)	NA* (20-80)	5	Reduced signal intensity	Present	52% (46%-58%)
Carragee et al, 2006 <sup>42</sup>	Cervical disc disease patients with no history of LBP causing functional loss or requiring treatment	200 (119)	39 (NA*)	5	Grading system of Pearce et al <sup>†</sup>	Moderate or severe	77% (71%-82%)
Schenk et al, 2006 <sup>10</sup>	Nurses with ≤ 7 days LBP in past year	34 (0)	51 (NA*)	5	Not stated	Advanced	12% (3%-27%)

1 \*NA = not available      †Described in Eyre D, Mooney V, Caterson B. Intervertebral disk: future directions. In Frymoyer JW, Gordon LS, eds. New  
2 perspectives on low back pain. Park Ridge: American Academy of Orthopaedic Surgeons, 1989: 209-14.

1 **Supplementary Table B: Association of disc degeneration with low back pain**

Reference	Population studied	Definition of disc degeneration	Low back pain		No low back pain		Odds ratio (95% CI)
			Disc degeneration n (%)	No disc degeneration n (%)	Disc degeneration n (%)	No disc degeneration n (%)	
Boos et al, 1995 <sup>20</sup>	46 LBP patients with concordant symptoms on discography: 46 volunteers who had never consulted or been absent from work because of LBP	Grading system of Pearce et al <sup>†</sup>	44 (96)	2 (4)	39 (85)	7 (15)	4.0 (0.8-20)
Kjaer et al, 2005 <sup>6</sup>	Volunteers from general population, including 284 with LBP in past year and 128 without such pain	Reduced disc height	171 (60)	113 (40)	48 (38)	80 (62)	2.5 (1.6 – 3.9)
		Reduced signal intensity	148 (52)	136 (48)	38 (30)	90 (70)	2.6 (1.7-4.0)
Luoma et al, 2000 <sup>8</sup>	143 volunteers from three occupations, including 106 with LBP in past year	Reduced signal intensity	97 (92)	9 (6)	28 (76)	9 (24)	3.5 (1.3-9.6)
Paajanen et al, 1989 <sup>37</sup>	75 military conscripts referred to hospital with LBP and 34 volunteers with no history of LBP	Reduced signal intensity	43 (57)	32 (43)	12 (35)	22 (65)	2.5 (1.1-5.7)
Paajanen et al, 1997 <sup>38</sup>	127 patients with LBP aged 20-49 years and 136 asymptomatic controls	Reduced signal intensity	90 (71)	37 (28)	76 (56)	60 (44)	1.9 (1.1-3.2)
Savage et al, 1997 <sup>7</sup>	149 volunteers from 5 occupations, including 79 with LBP in past year and 70 without such pain	Reduced signal intensity	37 (47)	42 (53)	21 (30)	49 (70)	2.1 (1.0-4.0)
Swärd et al, 1991 <sup>5</sup>	Male elite gymnasts and non athletes including 25 with current or past LBP	Reduced signal intensity (thoraco-lumbar spine)	19 (76)	6 (24)	4 (27)	11 (73)	8.7 (2.0-38)
Visuri et al, 2005 <sup>24</sup>	108 male conscripts with chronic LBP: 90 male conscripts who had never had LBP	Reduced disc height and reduced signal intensity	46 (43)	62 (57)	19 (21)	71 (79)	2.8 (1.5-5.2)

2 †Described in Eyre D, Mooney V, Caterson B. Intervertebral disk: future directions. In Frymoyer JW, Gordon LS, eds. New perspectives on low back pain.  
3 Park Ridge: American Academy of Orthopaedic Surgeons, 1989: 209-14.

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