**Appendix 1**

Table: Baseline Characteristics of the Groningen Spine Cohort; extensive version on item level

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| **Characteristic** | **Patients**  **(n = 1502)** |
| Age, mean years ± SD | 46.3 ± 12.8 |
| Sex, n (%) |  |
| Female | 857 (57) |

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| **Medical history** |  |
| Previous medical imaging for current LBP, n (%) | 1328 (88) |
| Visited medical specialist for current LBP, n (%) | 822 (55)a |
| Neurologist | 533 (36) |
| Rehabilitation specialist | 261 (17) |
| Pain anesthesiologist | 199 (13) |
| Neurosurgeon | 206 (14) |
| Orthopedic surgeon | 183 (12) |
| Trauma surgeon | 25 (2) |
| Rheumatologist | 79 (5) |
| Internist | 32 (2) |
| Psychologist | 44 (3) |
| Psychiatrist | 13 (1) |
| Other | 119 (8) |
| Red flags, n (%) |  |
| History of cancer | 85 (6) |
| Unexplained weight loss | 145 (10) |
| Nocturnal pain | 730 (49) |
| Systematically unwell | 663 (44) |
| Prolonged use of corticosteroids | 123 (8) |
| Morning stiffness > 1 hour | 797 (53) |
| Recent significant Trauma | 250 (17) |
| Leg dominant pain | 490 (33) |
| Current pain medication use, n (%) | 1136 (76) |
| Paracetamol | 838 (56) |
| NSAIDs | 535 (36) |
| Opioids | 417 (28) |
| Valium | 41 (3) |
| Other | 307 (20) |

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| **NIH minimal dataset** |  |
| Duration LBP, n (%) |  |
| < 1 month | 8 (1) |
| 1-3 months | 32 (2) |
| 3-6 months | 70 (5) |
| 6 months – 1 year | 170 (11) |
| 1 – 5 years | 595 (35) |
| > 5 years | 645 (46) |
| Frequency LBP over past 6 months, n (%) |  |
| Every day or nearly every day | 1304 (87) |
| At least half the days | 135 (9) |
| Less than half the days | 63 (4) |
| NRS score back pain (0-10), median (IQR) | 7.0 (6.0;8.0) |
| Back pain spread to the legs during the past 2 weeks, n (%) |  |
| Yes | 1047 (70) |
| No | 338 (23) |
| Not sure | 117 (8) |
| NRS score leg pain (0-10), median (IQR) | 6.0 (3.0;7.0) |
| Previous low-back operation(s), n (%) |  |
| More than 1 operation | 161 (11) |
| 1 operation | 226 (15) |
| No operation | 1115 (74) |
| Last low-back operation, n (%) |  |
| < 6 months ago | 35 (2) |
| 6 months – 1 year ago | 47 (3) |
| 1 – 2 years ago | 63 (4) |
| > 2 years ago | 248 (16) |
| *n/a* | *1115 (74)* |
| Previous low-back operation involving spinal fusion, n (%) |  |
| Yes | 25 |2) |
| No | 164 (11) |
| Not sure | 198 (13) |
| *n/a* | *1115 (74)* |
| Treatment(s) used for LBP, n (%) |  |
| Opioids | 803 (53) |
| Injections | 328 (22) |
| Exercise Therapy | 1316 (88) |
| Psychological counseling | 222 (15) |
|  |  |
| Bothered by … during the past 4 weeks, n (%) | *Not at all* | *A little* | *A lot* |
| stomach pain | 850 (57) | 505 (34) | 147 (9) |
| pain in arms, joints, or legs other than spine or back | 263 (18) | 480 (32) | 759 (51) |
| headaches | 636 (42) | 658 (44) | 208 (14) |
| widespread pain | 623 (42) | 529 (35) | 350 (23) |
|  |  |  |  |
| Pain interference with … in the past 7 days, n (%) | *Not at all* | *A little bit* | *Somewhat* | *Quite a bit* | *Very much* |
| day-to-day activities | 12 (1) | 61 (4) | 253 (17) | 777 (52) | 399 (27) |
| work around the home | 18 (1) | 82 (6) | 212 (14) | 710 (47) | 480 (32) |
| being able to participate in social activities | 66 (5) | 120 (8) | 335 (22) | 637 (43) | 344 (23) |
| household chores | 29 (2) | 120 (8) | 306 (20) | 645 (43) | 402 (27) |
|  |  |  |  |  |  |
| Physical function, n (%) | *Without any difficulty* | *With a little difficulty* | *With some difficulty* | *With much difficulty* | *Unable to do* |
| Ability to do chores such as vacuuming or yard work | 36 (2) | 102 (7) | 496 (33) | 632 (42) | 236 (16) |
| Ability to go up and down stairs at a normal pace | 165 (11) | 291 (19) | 506 (34) | 380 (25) | 160 (11) |
| Ability to go for a walk of at least 15 minutes | 207 (14) | 301 (20) | 421 (28) | 346 (23) | 227 (15) |
| Ability to run errands and shop | 154 (10) | 243 (16) | 509 (34) | 466 (31) | 130 (9) |
|  |  |  |  |  |  |
| Feelings in the past 7 days, n (%) | *Never* | *Rarely* | *Sometimes* | *Often* | *Always* |
| Feelings of worthlessness | 581 (39) | 210 (14) | 359 (24) | 298 (20) | 54 (4) |
| Feelings of helplessness | 410 (27) | 214 (14) | 451 (30) | 352 (23) | 75 (5) |
| Feelings of depression | 612 (41) | 280 (19) | 371 (25) | 190 (13) | 49 (3) |
| Feelings of hopelessness | 468 (31) | 242 (16) | 431 (29) | 291 (19) | 70 (5) |
|  |  |  |  |  |  |
| Sleep in the past 7 days, n (%) | *Very poor* | *Poor* | *Fair* | *Good* | *Very good* |
| Sleep quality | 179 (12) | 355 (24) | 607 (40) | 319 (21) | 42 (3) |
|  |  |  |  |  |  |
|  | *Not at all* | *A little bit* | *Somewhat* | *Quite a bit* | *Very much* |
| Sleep was refreshing | 495 (33) | 353 (24) | 446 (30) | 181 (12) | 27 (2) |
| Problems with sleeping | 288 (19) | 258 (17) | 430 (29) | 390 (26) | 136 (9) |
| Difficulties falling asleep | 482 (32) | 269 (18) | 331 (22) | 287 (19) | 133 (9) |
|  |  |  |  |  |  |
| Agrees it’s not really safe for a person with their back problem to be physically active, n (%) | 598 (40) |
| Agrees that their back pain is terrible and it’s never going to get any better, n (%) | 722 (48) |
| Has drunk or used more drugs than meant to in the past year, n (%) |  |
| Never | 1229 (82) |
| Rarely | 137 (9) |
| Sometimes | 108 (7) |
| Often | 28 (2) |
| Feelings of wanting or needing to cut down drinking or drug use, n (%) |  |
| Never | 1276 (85) |
| Rarely | 98 (7) |
| Sometimes | 95 (6) |
| Often | 33 (2) |
| Smoking behavior, n (%) |  |
| Never smoked | 541 (36) |
| Current smoker | 464 (31) |
| Used to smoke, but have now quit | 497 (33) |
| Length in centimeters, mean ± SD | 175.5 ± 10.5 |
| Weight in kilograms, mean ± SD | 83.2 ± 17.5 |
| Body-mass index (BMI), mean ± SD | 27.1 ± 6.7 |
| Education level, n (%) |  |
| No education | 29 (2) |
| Low | 522 (35) |
| Middle | 487 (32) |
| High | 343 (23) |
| other | 121 (8) |
| Involved in a lawsuit or legal claim related to back problem, n (%) |  |
| Yes | 39 (3) |
| No | 1436 (96) |
| Not sure | 27 (2) |
| Employment status, n (%)b |  |
| Working now | 618 (41) |
| Looking for work/unemployed | 133 (9) |
| Permanently disabled | 253 (17) |
| Temporarily disabled | 361 (24) |
| Student | 75 (5) |
| Retired | 40 (3) |
| Keeping house | 140 (9) |
| Other | 254 (17) |
| Off work or unemployed for 1 month or more due to LBP, n (%) |  |
| Agree | 367 (24) |
| Disagree | 389 (26) |
| n/a | 746 (50) |
| Receives or applied for disability or workers’ compensation benefits for being unable to work due to LBP, n (%) |  |
| Agree | 362 (24) |
| Disagree | 369 (25) |
| n/a | 771 (51) |
| NIH minimal dataset Impact Stratification (8-50), mean ± SD | 35.2 ± 7.5 |

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| **Pain Disability Index (PDI)** |  |
| Family and home responsibilities (0-10), mean ± SD | 6.1 ± 2.2 |
| Recreation (0-10), mean ± SD | 6.8 ± 2.2 |
| Social activities (0-10), mean ± SD | 5.8 ± 2.6 |
| Occupation (0-10), mean ± SD | 6.8 ± 2.5c |
| Sexual activities (0-10), mean ± SD | 5.4 ± 3.0d |
| Personal Care (0-10), mean ± SD | 4.0 ± 2.8 |
| Basic needs (0-10), mean ± SD | 3.4 ± 2.8 |
| PDI total (0-70), mean ± SD | 38.2 ± 14.1 |

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| **Euroqol-5D (EQ5D)** |  |
| Mobility, n (%) |  |
| No problems in walking about | 294 (20) |
| Some problems in walking about | 1183 (79) |
| Confined to bed | 26 (2) |
| Self-care, n (%) |  |
| No problems with self-care | 879 (59) |
| Some problems washing or dressing him-/herself | 618 (41) |
| Unable to wash or dress him-/herself | 10 (1) |
| Usual activities, n (%) |  |
| No problems performing their usual activities | 94 (6) |
| Some problems performing their usual activities | 1175 (78) |
| Unable to perform their usual activities | 234 (16) |
| Pain/discomfort, n (%) |  |
| No pain or discomfort | 32 (2) |
| Moderate pain or discomfort | 751 (50) |
| Extreme pain or discomfort | 720 (48) |
| Anxiety/depression, n (%) |  |
| Not anxious or depressed | 787 (52) |
| Moderately anxious or depressed | 629 (42) |
| Extremely anxious or depressed | 87 (6) |
| EQ5D: health state (0-100), mean ± SD | 52.9 ± 19.7e |
| EQ5D: utility value (-0.33-1.00), median (IQR) | 0.39 (0.17;0.72) |

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| **Work** |  |
| Work ability (0-10), median (IQR) | 4.0 (1.0;6.0) |
| Work status, n (%) |  |
| Not working | 602 (40) |
| Employed | 901 (60) |
| Working | 409 (27) |
| Partial sick leave | 260 (17) |
| Sick leave | 232 (15) |
|  |  |
|  | *n = 901:* |
| Work hours per week, mean ± SD | 31.6 ± 13.6 |
| Work field, n (%) |  |
| Agriculture and fishing | 18 (2) |
| Mining and quarrying | 2 (0) |
| Industry | 65 (7) |
| Water and energy | 13 (1) |
| Construction | 57 (6) |
| Trade | 86 (8) |
| Hotel and catering | 29 (3) |
| Financial and business services | 66 (7) |
| Cultural and recreational services | 20 (2) |
| Government and public administration | 48 (5) |
| Education | 62 (7) |
| Health care | 222 (25) |
| Other | 203 (23) |
| Self-employed, n (%) | 100 (11) |
| Work demands are primarily, n (%) |  |
| Physical | 313 (35) |
| Mental | 250 (28) |
| Both physical and mental | 338 (38) |
| Duration of current position at current company, n (%) |  |
| Less than 1 year | 88 (10) |
| 1-5 years | 220 (24) |
| More than 5 years | 593 (66) |
| Type of work |  |
| Blue-collar | 491 (55) |
| White-collar | 242 (27) |
| Combination | 168 (19) |
| Prolonged periods of … during work, n (%) |  |
| Standing/walking | 579 (64) |
| Sitting | 558 (62) |
| Lifting/carrying | 431 (48) |
| Bending/stooping | 464 (52) |
| Crouching/squatting | 336 (37) |
| Number of employees at current workplace, n (%) |  |
| 1-9 employees | 158 (18) |
| 10-99 employees | 234 (26) |
| More than 100 employees | 417 (46) |
| Not applicable | 92 (10) |
| Believes, from the standpoint of his/her health, to be able to do their current job two years from now, n (%) |  |
| Relatively certain | 337 (37) |
| Not certain | 401 (45) |
| Unlikely | 163 (18) |
| Workplace changes/adaptations due to health status, n (%) |  |
| No workplace changes/adaptations | 458 (51) |
| Working less hours weekly | 163 (18) |
| Hours less, mean ± SD | 14.9 ± 9.4 |
| Employment for less hours weekly | 16 (2) |
| Hours less, mean ± SD | 10.5 ± 6.9 |
| Change in position | 36 (4) |
| Change of duties | 94 (10) |
| Change of working hours | 76 (8) |
| No longer in managerial position | 10 (1) |
| Less demanding work | 110 (12) |
| More breaks | 76 (8) |
| More flexible work hours | 53 (6) |
| Work site adaptations | 102 (11) |
| Other employee has taken over part of the work | 60 (7) |
| Ergonomic adaptation | 80 (9) |
| Other | 181 (20) |

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| **Copenhagen Psychosocial Questionnaire – COPSOQ II (short/adapted)** | *n = 901* |  |  |  |  |
| Psychosocial work enviroment, n (%) | *Never/*  *hardly ever* | *Seldom* | *Sometimes* | *Often* | *Always* |
| Getting behind with work | 280 (31) | 255 (28) | 275 (31) | 68 (8) | 23 (3) |
| Having enough time for work tasks | 39 (4) | 92 (10) | 209 (23) | 357 (40) | 204 (23) |
| Necessity to keep working at high pace | 48 (5) | 105 (12) | 383 (43) | 273 (30) | 92 (10) |
| Working at a high pace throughout the day | 51 (6) | 147 (16) | 341 (38) | 265 (29) | 97 (11) |
| Work putting them self in emotionally disturbing situations | 320 (36) | 248 (28) | 276 (31) | 50 (6) | 7 (1) |
| Relating to other people’s personal problems as part of work | 435 (48) | 191 (21) | 190 (21) | 59 (7) | 26 (3) |
| Large degree of influence concerning work | 142 (16) | 144 (16) | 244 (27) | 266 (30) | 105 (12) |
| Able to influence the amount of work assigned | 151 (17) | 155 (17) | 376 (42) | 160 (18) | 59 (7) |
|  |  |  |  |  |  |
|  | *To a very small extent* | *To a small extent* | *Somewhat* | *To a large extent* | *To a very large extent* |
| Possibility of learning new things through work | 128 (14) | 130 (14) | 311 (35) | 242 (27) | 90 (10) |
| Work requires taking initiative | 27 (3) | 56 (6) | 249 (28) | 373 (41) | 196 (22) |
| Own work is meaningful | 8 (1) | 10 (1) | 130 (14) | 439 (49) | 314 (35) |
| Feeling that own work is important | 14 (2) | 27 (3) | 148 (16) | 422 (47) | 290 (32) |
| Place of work is of great importance to them self | 27 (3) | 69 (8) | 240 (27) | 372 (41) | 193 (21) |
| Would recommend a good friend to apply for a position at own workplace | 88 (10) | 94 (10) | 263 (29) | 333 (37) | 123 (14) |
| Work is recognized and appreciated by management | 69 (8) | 105 (12) | 304 (34) | 305 (34) | 118 (13) |
| Being treated fairly at workplace | 26 (3) | 47 (5) | 225 (25) | 430 (48) | 173 (19) |
|  |  |  |  |  |  |
|  | *Never/*  *hardly ever* | *Seldom* | *Sometimes* | *Often* | *Always* |
| Immediate superior willing to listen to problems at work | 41 (5) | 56 (6) | 171 (19) | 297 (33) | 336 (37) |
| Getting help and support from immediate superior | 74 (8) | 93 (11) | 279 (30) | 260 (29) | 195 (22) |
| Colleagues willing to listen to problems at work | 41 (5) | 34 (4) | 141 (16) | 404 (45) | 281 (31) |
| Getting help and support from colleagues | 52 (6) | 54 (6) | 234 (26) | 337 (37) | 224 (25) |
|  |  |  |  |  |
|  | *Very unsatisfied* | *Unsatisfied* | *Satisfied* | *Very satisfied* |
| Regarding work in general: Being pleased with their job as a whole, everything taken into consideration | 14 (2) | 61 (7) | 497 (55) | 329 (37) |
|  |  |  |  |  |
| Work affecting private/family life, n (%) | *No, not at all* | *Yes, but only very little* | *Yes, to a certain degree* | *Yes, certainly* |
| Feeling that work drains so much energy that is has a negative effect on private life | 273 (30) | 262 (29) | 272 (30) | 94 (10) |
| Feeling that work takes so much time that is has a negative effect on private life | 464 (52) | 243 (27) | 159 (18) | 35 (4) |
|  |  |  |  |  |
| Work: company as a whole, n (%) | *To a very small extent* | *To a small extent* | *Somewhat* | *To a large extent* | *To a very large extent* |
| Conflicts being resolved in a fair way | 36 (4) | 79 (9) | 293 (33) | 367 (41) | 126 (14) |
| Fair distribution of work | 27 (3) | 80 (9) | 289 (32) | 383 (43) | 122 (14) |

N, number of patients; SD, standard deviation; LBP, low back pain; NRS, numerical rating scale; IQR, interquartile range: quartile 1 to quartile 3; n/a, not applicable; NIH, National Institutes of Health;   
a23 missing, bmultiple answers allowed, c121 missing (“not applicable”), d240 missing (“not applicable”), e11 missing