## Additional file 5

## Descriptive presentation of preferred model solutions for the summary-score and single-item strategies with description of the identified subgroups for each health domain and subgroup by

 subgroup matrix (count of crossing subgroups)
## Explanatory legend

We described each variable by using:

- standardised descriptive labels for quintiles (see Table 1)
- proportions (\%) for nominal or ordinal variables with less than four categories
- interquartile ranges (IQR) for the remaining ordinal items and continuous items

Subgroup size and description of variables are based on the patients assigned to the subgroup for which their posterior probability was the largest
Table 1. Standardised wording used to report the quintiles within the estimates and subgroup profile plots

| Range, $\%$ | $0-19$ | $20-39$ | $40-59$ | $60-79$ | $80-100$ |
| :--- | :---: | :---: | :---: | :---: | :---: |
| 'Very few to most' | Very few | Few | Half | Many | Most |
| 'Low - high' | Very low | Low | Moderate | High | Very high |
| 'All or none' | $0=$ none |  |  |  |  |

Table 2A: Descriptive presentation of the six subgroups identified in the psychology domain when using the summary-score strategy

| Variable | Psych_sum 1 | Psych_sum 2 | Psych_sum 3 | Psych_sum 4 | Psych_sum 5 | Psych_sum 6 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| High-risk group (SBT) | Very few in SBT high-risk group <br> (7\%) | Very few in SBT high-risk group <br> (3\%) | Very few in SBT high-risk group <br> (2\%) | Very few in SBT high-risk group (3\%) | Few in SBT high-risk group (26\%) | Many in SBT high-risk group (73\%) | Dichotomous 0=Low and medium risk 1=high risk |
| Able to decrease pain* | Moderately able to decrease pain (IQR=2-6) | Moderately able to decrease pain (IQR=3-6) | Highly able to decrease pain (IQR=1-4) | Moderately able to decrease pain (IQR=3-5) | Moderately able to decrease pain (IQR=3-5) | Little ability to decrease pain (IQR=5-8) | $\begin{aligned} & \begin{array}{c} \text { Continuous } \\ 0=\text { Completely } \end{array} \\ & 10=\text { not at all } \end{aligned}$ |
| FABQ - physical activity subscale * | Moderate degree of fear avoidance beliefs (IQR=10-18) | Moderate degree of fear avoidance beliefs (IQR=9.5-16.5) | Low degree of fear avoidance beliefs (IQR=6-14) | Moderate degree of fear avoidance beliefs (IQR=10-16) | Moderate degree of fear avoidance beliefs (IQR=10-15) | Very high degree of fear avoidance beliefs (IQR=18-21) | Continuous <br> $0=$ no fear avoidance beliefs 24=high fear avoidance beliefs |
| Cannot work till pain is treated (FABQ-14)* | Few cannot work <br> Disagree=59\% <br> Unsure=8\% <br> Agree=32\% | Few cannot work <br> Disagree=59\% <br> Unsure=12\% <br> Agree=28\% | Very few cannot work $\begin{gathered} \text { Disagree }=100 \% \\ \text { Unsure }=0 \% \\ \text { Agree }=0 \% \\ \hline \end{gathered}$ | Few cannot work <br> Disagree=60\% <br> Unsure=14\% <br> Agree=26\% | Few cannot work <br> Disagree=49\% <br> Unsure=14\% <br> Agree=38\% | Many cannot work <br> Disagree=14\% <br> Unsure=7\% <br> Agree=79\% | Ordinal ${ }^{+}$ <br> $0=$ completely disagree $3=$ unsure 6=completely agree |
| Feel socially isolated | Very few feel socially isolated (15\%) | Few feel socially isolated (37\%) | Very few feel socially isolated (8\%) | Few feel socially isolated (34\%) | Most feel socially isolated (94\%) | Many feel socially isolated (55\%) | Dichotomous <br> $0=$ Not at all isolated <br> 1=little to quite isolated |
| Negative recovery belief** | Few with negative recovery belief (23\%) | Few with negative recovery belief (33\%) | Very few with negative recovery belief (17\%) | Few with negative recovery belief <br> (34\%) | Half with negative recovery belief (51\%) | Half with negative recovery belief (49\%) | Dichotomous 0=Likely to recover 1=Unsure-Not at all likely |
| Degree of depression** | Low degree of depression (IQR=3-12) | Very low degree of depression (IQR=5-10) | Very low degree of depression (IQR=1-4) | Low degree of depression (IQR=5-11) | Moderate degree of depression <br> (IQR=19-28) | Moderate degree of depression (IQR=11.5-27.5) | Continuous $0=$ not depressed 37=depressed |
| Treatment | Very few believe treatment | Many believe treatment is | Half believe treatment is not | Very few believe treatment | Half believe treatment is not | Few believe treatment is not | Continuous |


| not essential | is not essential to reduce pain (IQR=0-0) | not essential to reduce pain (IQR=5-9) | essential to reduce pain (IQR=3-7) | is not essential to reduce pain (IQR=1-2) | essential to reduce pain (IQR=2-7) | essential to reduce pain (IQR=1-5) | 0=completely disagree 10=completely agree |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subgroup description | Moderate pain-related concern, not socially isolated, treatment believers <br> Less <br> - Feel socially isolated <br> - Thinks that treatment is not essential to reduce pain | Moderate pain-related concern, non-treatment believers <br> More <br> - Thinks that treatment is not essential to reduce pain <br> - With a very low degree of depression | Uncomplicated psychological profile <br> Less <br> - with no ability to decrease pain <br> - with negative recovery belief <br> - feel socially isolated <br> - fear-avoidance beliefs (physical activity) <br> - cannot work | Moderate pain-related concern, treatment believers <br> Less <br> - Thinks that treatment is not essential to reduce pain | Socially isolated and depressed patients <br> More <br> - feel socially isolated <br> - with negative recovery belief <br> - with a higher degree of depression | Complicated psychological profile <br> More <br> - in SBT high-risk group <br> - with no ability to decrease pain <br> - with fear-avoidance beliefs (phy.act) <br> - cannot work <br> - feel socially isolated <br> - with negative recovery belief <br> - with a higher degree of depression <br> - thinks that treatment is not essential to reduce pain |  |
| Subgroup size, N | 336 (36\%) | 197 (21\%) | 179 (19\%) | 133 (14\%) | 50 (5\%) | 33 (4\%) |  |
| Posterior probability, median | $\begin{gathered} 1.00 \\ (\text { IQR=98-100) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.93 \\ (\mathrm{IQR}=77-98) \end{gathered}$ | $\begin{gathered} 0.83 \\ (\text { IQR }=72-94) \end{gathered}$ | $\begin{gathered} 0.88 \\ (\mathrm{IQR}=69-93) \end{gathered}$ | $\begin{gathered} 0.96 \\ \text { (IQR=84-99) } \end{gathered}$ | $\begin{gathered} 0.83 \\ (\mathrm{IQR}=71-98) \end{gathered}$ |  |
| Posterior probability less than 0.70, N | $\begin{gathered} \hline 14 \\ (4 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 37 \\ (19 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 43 \\ (24 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 36 \\ (27 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 6 \\ (12 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 8 \\ (24 \%) \end{gathered}$ |  |

Bold text indicates characteristic features which mainly identify the respective subgroups
IQR = interquartile range; SBT = STarT Back Tool; FABQ = Fear-Avoidance Beliefs Questionnaire
Trichotomised for the descriptive analysis: 0=disagree (0-2), $1=$ unsure (3), 2=agree (4-6)
Symbols and light lines: Variables which have similar scoring pattern across subgroups representing an overall feature:
*pain-related concerns
** depressive mood

## Table 2B. Subgroup by subgroup matrix to count crossing subgroups, psychology domain, summary-score strategy

Table 2B. Subgroup by subgroup matrix to count crossing subgroups, psychology do

| <: row subgroup is always below column subgroup <br> >: row subgroup is always above column subgroup <br> X: the subgroups are crossing <br> Profile | Psych_sum 1 | Psych_sum 2 | Psych_sum 3 | Psych_sum 4 | Psych_sum 5 |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Psych_sum 2 | X |  |  |  |  |
| Psych_sum 3 | X | $>$ |  |  |  |
| Psych_sum 4 | X | X | X |  |  |
| Psych_sum 5 | X | X | X | X |  |
| Psych_sum 6 | $>$ | X | X | $\mathrm{>}$ | X |

Table 3A: Descriptive presentation of the eight subgroups identified in the psychology domain when using the single-item strategy

| Variable $\quad$Subgroup <br> name | Psych_single 1 | Psych_single 2 | Psych_single 3 | Psych_single 4 | Psych_single 5 | Psych_single 6 | Psych_single 7 | Psych_single 8 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Treatment not essential | Very few believe treatment is not essential to reduce pain (IQR=0-0) | $\qquad$ | $\qquad$ | $\qquad$ | Very few believe treatment is not essential to reduce pain (IQR=0-0) | Half believe treatment is not essential to reduce pain (IQR=2-7) | Few believe treatment is not essential to reduce pain (IQR=1-6) | Many believe treatment is not essential to reduce pain (IQR=3-10) | Continuous $0=$ completely disagree 10=completely agree |
| Sleep less well (RMDQ- 15)* | Many sleep less well (61\%) | Many sleep less well (72\%) | Few sleep less well (28\%) | None sleep less well (0\%) | Many sleep less well (78\%) | All sleep less well (100\%) | Many sleep less well (69\%) | Many sleep less well (74\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Had trouble sleeping at night (MDI-9)* | Very few had trouble sleeping (IQR=0-1) | Few had trouble sleeping (IQR=1-3) | Very few had trouble sleeping (IQR=0-1) | Very few had trouble sleeping (IQR=0-0) | Half had trouble sleeping (IQR=1-4) | Half had trouble sleeping (IQR=1-3) | Many had trouble sleeping (IQR=2-4) | Few had trouble sleeping (IQR=0-2) | Ordinal $0=$ at no time 5=all the time |
| Able to decrease pain** | Moderately able to decrease pain (IQR=2-7) | Moderately able to decrease pain (IQR=3-6) | Highly able to decrease pain (IQR=1-4) | Highly able to decrease pain (IQR=2-5) | Moderately able to decrease pain (IQR=2-7) | Highly able to decrease pain (IQR=2-5) | Moderately able to decrease pain (IQR=3-6) | Moderately able to decrease pain (IQR=3.5-7) | Continuous 0=Completely $10=$ Not at all |
| Work might harm back (FABQ-11)** | Few believe work will harm <br> Disagree=56\% <br> Unsure=17\% <br> Agree=28\% | Half believe work will harm <br> Disagree=24\% <br> Unsure=21\% <br> Agree=55\% | Very few believe work will harm <br> Disagree=87\% Unsure=8\% Agree=5\% | Few believe work will harm <br> Disagree=54\% <br> Unsure=19\% <br> Agree=27\% | Few believe work will harm <br> Disagree=35\% <br> Unsure=28\% <br> Agree=37\% | Very few believe work will harm <br> Disagree=72\% Unsure=9\% Agree=18\% | Half believe work will harm <br> Disagree=24\% <br> Unsure=28\% <br> Agree=48\% | Few believe work will harm <br> Disagree=34\% <br> Unsure=30\% <br> Agree=36\% | Ordinal $^{\dagger}$ $0=$ completely disagree $3=$ unsure 6=completely agree |
| Should not do normal work with present pain (FABQ-12)** | Few believe they should not do normal work <br> Disagree=52\% <br> Unsure=21\% <br> Agree=27\% | Half believe they should not do normal work <br> Disagree=29\% <br> Unsure=18\% <br> Agree=53\% | Very few believe they should not do normal work <br> Disagree=99\% <br> Unsure=1\% <br> Agree=0\% | Very few believe they should not do normal work <br> Disagree=73\% <br> Unsure=17\% <br> Agree=11\% | Few believe they should not do normal work <br> Disagree=43\% <br> Unsure=22\% <br> Agree=35\% | Very few believe they should not do normal work <br> Disagree=90\% <br> Unsure=7\% <br> Agree=3\% | Few believe they should not do normal work <br> Disagree=37\% <br> Unsure=24\% <br> Agree=39\% | Half believe they should not do normal work <br> Disagree=23\% <br> Unsure=23\% <br> Agree=55\% | Ordinal ${ }^{\dagger}$ $0=$ completely disagree 3=unsure 6=completely agree |
| Cannot work till pain is treated (FABQ-14)** | Few cannot work <br> Disagree=56\% <br> Unsure=10\% <br> Agree=34\% | Half cannot work <br> Disagree=36\% <br> Unsure=20\% <br> Agree=44\% | None cannot work $\begin{gathered} \text { Disagree }=100 \% \\ \text { Unsure }=0 \% \\ \text { Agree }=0 \% \\ \hline \end{gathered}$ | Very few cannot work <br> Disagree= $83 \%$ <br> Unsure=8\% <br> Agree=9\% | Few cannot work <br> Disagree=60\% <br> Unsure=8\% <br> Agree=33\% | Very few cannot work <br> Disagree=92\% <br> Unsure=3\% <br> Agree=5\% | Half cannot work <br> Disagree=43\% <br> Unsure=9\% <br> Agree=48\% | Half cannot work <br> Disagree=36\% <br> Unsure=7\% <br> Agree=57\% | Ordinal $^{\dagger}$ $0=$ completely disagree $3=$ unsure 6=completely agree |
| Feel socially isolated | Very few feel socially isolated (7\%) | Half feel socially isolated (53\%) | Very few feel socially isolated (6\%) | Few feel socially isolated (37\%) | Few feel socially isolated (30\%) | Few feel socially isolated (21\%) | Many feel socially isolated (76\%) | Very few feel socially isolated (2\%) | Dichotomous $0=$ Not at all isolated 1=little to quite isolated |
| Not enjoyed things used to enjoy (SBT-8) ${ }^{\text { }}$ | Few have not enjoyed usual things (29\%) | Many have not enjoyed usual things (61\%) | Very few have not enjoyed usual things (6\%) | Few have not enjoyed usual things (24\%) | Many have not enjoyed usual things (62\%) | Half have not enjoyed usual things (41\%) | Most have not enjoyed usual things (83\%) | Half have not enjoyed usual things <br> (44\%) | Dichotomous <br> 0=disagree <br> 1=agree |
| Negative recovery belief | Very few with negative recovery belief (18\%) | Few with negative recovery belief (38\%) | Very few with negative recovery belief (15\%) | Few with negative recovery belief (33\%) | Few with negative recovery belief (33\%) | Few with negative recovery belief (28\%) | Half with negative recovery belief (53\%) | Very few with negative recovery belief (15\%) | Dichotomous $0=$ Likely to recover 1=Unsure-Not at all likely |
| Worrying thoughts a lot of the time (SBT-6) ${ }^{\text { }}$ | Very few worried (9\%) | Half worried (42\%) | Very few worried (2\%) | Very few worried (8\%) | Half worried (47\%) | Few worried (24\%) | Most worried (85\%) | Very few worried (4\%) | Dichotomous <br> 0=disagree 1=agree |
| Lost interest in daily activities (MDI-2) | Very few have lost interest all the time, half some of the time | Few have lost interest all the time, half some of the time | None have lost interest all the time, very few some of the time | Very few have lost interest all the time, half some of the time | Half have lost interest all the time, half some of the time | Very few have lost interest all the time, half some of the time | Most have lost interest all the time, very few some of the time | None have lost interest all the time, very few some of the time | Ordinal $0=$ at no time 1=some of the time 2=slightly-all the time |


|  | At no time=65\% <br> Some of the time=31\% Slightly-all the time=4\% | $\begin{aligned} & \text { At no time=17\% } \\ & \text { Some of the } \\ & \text { time=55\% } \\ & \text { Slightly-all the } \\ & \text { time }=28 \% \end{aligned}$ |
| :---: | :---: | :---: |
| Felt very restless/subdued/slowed down (MDI-8) ${ }^{\text {d }}$ | Very few have felt restless all the time, half some of the time <br> At no time=47\% <br> Some of the time=46\% <br> Slightly-all the time=7\% | Half have felt restless all the time, half some of the time <br> At no time=4\% Some of the time=50\% Slightly-all the time=46\% |
| Had a bad conscience (MDI-5) ${ }^{\text {a }}$ | Very few had bad conscience all the time or some of the time <br> At no time=77\% Some of the time=19\% <br> Slightly-all the time=4\% | Few had bad conscience all the time or some of the time <br> At no time=35\% Some of the time=37\% Slightly-all the time=28\% |
| Felt low in spirits/sad $(\text { MDI-1 })^{x}$ | Very few had felt sad all the time and few some of the time <br> At no time=76\% <br> Some of the time=24\% <br> Slightly-all the time=1\% | Very few had felt sad all the time, many some of the time <br> At no time=18\% <br> Some of the time=73\% <br> Slightly-all the time=9\% |
| Felt lacking in energy and strength (MDI-3) ${ }^{\text {d }}$ | Very few felt lacking in energy some of or all the time (IQR=0-1) | Half felt lacking in energy some of or all the time (IQR=1-3) |
| Felt less self-confident (MDI-4) ${ }^{\text {® }}$ | None had felt less self-confident all the time and very few some of the time <br> At no time=88\% Some of the time=12\% <br> Slightly-all the time=0\% | Very few had felt less self-confident all the time and half some of the time <br> At no time=36\% Some of the time=49\% Slightly-all the time=15\% |
| Had difficulty in concentrating (MDI-7) ${ }^{\text {® }}$ | Very few had difficulty in concentrating all the time or some of the time <br> At no time=81\% Some of the | Very few had difficulty in concentrating all the time and few some of the time <br> At no time=47\% Some of the |


| At no time=92\% Some of the time=8\% Slightly-all the time=0\% | At no time=35\% <br> Some of the time=54\% Slightly-all the time=11\% | At no time=9\% <br> Some of the <br> time=44\% <br> Slightly-all the time=47\% | At no time=50\% Some of the time=47\% Slightly-all the time=4\% |
| :---: | :---: | :---: | :---: |
| Very few have felt restless all the time, few some of the time <br> At no time=71\% Some of the time $=28 \%$ Slightly-all the time=1\% | Very few have felt restless all the time, many some of the time <br> At no time=25\% Some of the time=66\% Slightly-all the time=8\% | Half have felt restless all the time, few some of the time <br> At no time=2\% Some of the time=39\% Slightly-all the time=58\% | Very few have felt restless all the time, many some of the time <br> At no time=21\% <br> Some of the time=62\% <br> Slightly-all the time=17\% |
| None had bad conscience all the time and very few some of the time <br> At no time=92\% Some of the time=8\% Slightly-all the time=0\% | Very few had bad conscience all the time and few some of the time <br> At no time=60\% Some of the time=37\% <br> Slightly-all the time=3\% | Half had bad conscience all the time and few some of the time <br> At no time=25\% Some of the time=32\% <br> Slightly-all the time=43\% | Very few had bad conscience all the time and half some of the time <br> At no time=57\% Some of the time=40\% <br> Slightly-all the time=3\% |
| None had felt sad all the time and very few some of the time <br> At no time=90\% Some of the time=10\% <br> Slightly-all the time=0\% | Very few had felt sad all the time and half some of the time <br> At no time=40\% Some of the time=60\% Slightly-all the time=1\% | Few had felt sad all the time and many some of the time <br> At no time=11\% Some of the time=61\% Slightly-all the time=27\% | Very few had felt sad all the time and half some of the time <br> At no time=49\% <br> Some of the time=47\% <br> Slightly-all the time=3\% |
| Very few felt lacking in energy some of or all the time ( $\mathrm{IQR}=0-1$ ) | Few felt lacking in energy some of or all the time (IQR=1-1) | Half felt lacking in energy some of or all the time (IQR=2-4) | Few felt lacking in energy some of or all the time (IQR=1-1) |
| None had felt less self-confident all the time or some of the time <br> At no time=100\% Some of the time=0\% Slightly-all the time=0\% | Very few had felt less self-confident all the time and few some of the time <br> At no time=73\% Some of the time=23\% <br> Slightly-all the time=4\% | Few had felt less selfconfident all the time or some of the time <br> At no time=43\% Some of the time=33\% <br> Slightly-all the time=24\% | Very few had felt less self-confident all the time and few some of the time <br> At no time=76\% Some of the time=23\% <br> Slightly-all the time=1\% |
| None had difficulty in concentrating all the time and few some of the time <br> At no time=95\% Some of the time=5\% | Very few had difficulty in concentrating all the time or some of the time <br> At no time=77\% Some of the | Very few had difficulty in concentrating all the time and half some of the time <br> At no time=39\% Some of the | Very few had difficulty in concentrating all the time and few some of the time <br> At no time=74\% Some of the |


| At no time=2\% Some of the time=9\% Slightly-all the time=89\% | At no time=92\% Some of the time=8\% Slightly-all the time=0\% |  |
| :---: | :---: | :---: |
| Most have felt restless all the time, very few some of the time <br> At no time=0\% Some of the time=5\% Slightly-all the time=95\% | Very few have felt restless all the time, few some of the time <br> At no time=65\% Some of the time=33\% <br> Slightly-all the time=2\% | Ordinal $0=$ at no time 1=some of the time 2=slightly-all the time |
| Many had bad conscience all the time and very few some of the time <br> At no time=11\% Some of the time=16\% Slightly-all the time=73\% | None had bad conscience all the time and very few some of the time <br> At no time=98\% Some of the time=2\% Slightly-all the time=0\% | Ordinal $0=$ at no time 1=some of the time 2=slightly-all the time |
| Most had felt sad all the time and few some of the time <br> At no time=0\% Some of the time=16\% <br> Slightly-all the time=84\% | None had felt sad all the time and very few some of the time <br> At no time=98\% Some of the time=2\% Slightly-all the time=0\% | Ordinal $0=$ at no time 1=some of the time 2=slightly-all the time |
| Many felt lacking in energy some of or all the time (IQR=3-4) | Very few felt lacking in energy some of or all the time (IQR=0-1) | Ordinal $0=a t$ no time $5=$ all the time |
| Many had felt less self-confident all the time and few some of the time <br> At no time=5\% Some of the time=24\% <br> Slightly-all the time=71\% | None had felt less self-confident all the time or some of the time <br> At no time $=100 \%$ Some of the time=0\% Slightly-all the time=0\% | Ordinal $0=$ at no time 1=some of the time 2=slightly-all the time |
| Half had difficulty in concentrating all the time and few some of the time <br> At no time=4\% Some of the | None had difficulty in concentrating all the time and very few some of the time <br> At no time=94\% Some of the time=6\% | Ordinal $0=$ at no time 1=some of the time 2=slightly-all the time |


|  | time＝17\％ Slightly－all the time＝2\％ | time＝38\％ Slightly－all the time＝15\％ | Slightly－all the time＝0\％ | time＝19\％ Slightly－all the time＝3\％ | time＝42\％ <br> Slightly－all the time＝20\％ | time＝23\％ Slightly－all the time＝3\％ | time＝38\％ Slightly－all the time＝58\％ | Slightly－all the time＝0\％ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Have suffered from reduced／increased appetite（MDI－10） | Very few had reduced／increased appetite all the time or some of the time <br> At no time＝78\％ <br> Some of the time＝16\％ <br> Slightly－all the time＝5\％ | Very few had reduced／increased appetite all the time and few some of the time <br> At no time＝48\％ Some of the time＝34\％ <br> Slightly－all the time＝18\％ | None had reduced／increased appetite all the time and few some of the time <br> At no time＝98\％ Some of the time＝2\％ Slightly－all the time＝0\％ | Very few had reduced／increased appetite all the time or some of the time <br> At no time＝82\％ <br> Some of the time＝13\％ <br> Slightly－all the time＝6\％ | Few had reduced／increased appetite all the time or some of the time <br> At no time＝44\％ <br> Some of the time＝31\％ <br> Slightly－all the time＝25\％ | Very few had reduced／increased appetite all the time or some of the time <br> At no time＝80\％ <br> Some of the time＝15\％ <br> Slightly－all the time＝5\％ | Half had reduced／increased appetite all the time and few some of the time <br> At no time＝18\％ <br> Some of the time＝27\％ <br> Slightly－all the time＝55\％ | Very few had reduced／increased appetite all the time or some of the time <br> At no time＝85\％ <br> Some of the time＝13\％ <br> Slightly－all the time＝2\％ | Ordinal $0=$ at no time 1＝some of the time 2＝slightly－all the time |
| More irritable with people than usual （RMDQ－17）${ }^{\text {K }}$ | Few more irritable (23\%) | Half more irritable （54\％） | Very few more irritable （7\％） | Few more irritable （21\％） | Half more irritable （59\％） | Few more irritable （37\％） | Most more irritable <br> （91\％） | Few more irritable (25\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Rubbing or holding areas that hurt／are uncomfortable（RMDQ－ 21）${ }^{\text {an }}$ | Few rub／hold areas that hurt （35\％） | Half rub／hold areas that hurt （54\％） | Few rub／hold areas that hurt （22\％） | Half rub／hold areas that hurt （50\％） | Half rub／hold areas that hurt （59\％） | Half rub／hold areas that hurt （43\％） | Many rub／hold areas that hurt （75\％） | Few rub／hold areas that hurt （33\％） | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Not safe to be physically active（SBT－5）${ }^{\text {明 }}$ | Very few believe it is not safe to be physically active （14\％） | Few believe it is not safe to be physically active （28\％） | Very few believe it is not safe to be physically active （5\％） | Very few believe it is not safe to be physically active （7\％） | Few believe it is not safe to be physically active （24\％） | Very few believe it is not safe to be physically active （18\％） | Few believe it is not safe to be physically active （33\％） | Very few believe it is not safe to be physically active （17\％） | Dichotomous 0＝disagree 1＝agree |
| Terrible back pain，will never get better（SBT－7）如 | Very few with terrible back pain （1\％） | Very few with terrible back pain （11\％） | Very few with terrible back pain （1\％） | Very few with terrible back pain （5\％） | Very few with terrible back pain （15\％） | Very few with terrible back pain （1\％） | Few with terrible back pain （26\％） | Very few with terrible back pain （4\％） | Dichotomous 0＝disagree 1＝agree |
| Often express concern （RMDQ－23）${ }^{\text {吅 }}$ | Very few express concern （7\％） | Few express concern （26\％） | Very few express concern （2\％） | Very few express concern （7\％） | Few express concern （26\％） | Very few express concern （9\％） | Half express concern (42\%) | Very few express concern （10\％） | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \\ \hline \end{gathered}$ |
| Physical activity might harm back（FABQ－3）${ }^{\text {명 }}$ | Few believe phys．act． might harm back <br> Disagree＝38\％ <br> Unsure＝39\％ <br> Agree＝22\％ | Few believe phys．act． might harm back <br> Disagree＝31\％ <br> Unsure＝39\％ <br> Agree＝30\％ | Very few believe phys．act．might harm back <br> Disagree＝59\％ <br> Unsure＝25\％ <br> Agree＝15\％ | Few believe phys．act． might harm back <br> Disagree＝50\％ <br> Unsure＝28\％ <br> Agree＝21\％ | Few believe phys．act． might harm back <br> Disagree＝40\％ <br> Unsure＝31\％ <br> Agree＝29\％ | Very few believe phys．act．might harm back <br> Disagree＝56\％ <br> Unsure＝30\％ <br> Agree＝14\％ | Very few believe phys．act．might harm back <br> Disagree＝38\％ <br> Unsure＝43\％ <br> Agree＝19\％ | Few believe phys．act． might harm back <br> Disagree $=48 \%$ <br> Unsure＝30\％ <br> Agree＝22\％ | Ordinal ${ }^{\text { }}$ $0=$ completely disagree 3＝unsure 6＝completely agree |
| Should not do physical activity which（might） make worse（FABQ－4）${ }^{\text {몽 }}$ | Half believe avoiding phys．act．is better <br> Disagree＝20\％ <br> Unsure＝25\％ <br> Agree＝55\％ | Many believe avoiding phys．act．is better <br> Disagree＝14\％ <br> Unsure＝25\％ <br> Agree＝61\％ | Few believe avoiding phys．act．is better <br> Disagree＝37\％ <br> Unsure＝24\％ <br> Agree＝39\％ | Many believe avoiding phys．act．is better <br> Disagree＝21\％ <br> Unsure＝15\％ <br> Agree＝65\％ | Many believe avoiding phys．act．is better <br> Disagree＝19\％ <br> Unsure＝18\％ <br> Agree＝63\％ | Half believe avoiding phys．act．is better <br> Disagree＝22\％ <br> Unsure＝25\％ <br> Agree＝53\％ | Half believe avoiding phys．act．is better <br> Disagree＝18\％ <br> Unsure＝29\％ <br> Agree＝53\％ | Half believe avoiding phys．act．is better <br> Disagree＝18\％ <br> Unsure＝29\％ <br> Agree＝53\％ | Ordinal $^{\dagger}$ $0=$ completely disagree $3=$ unsure 6＝completely agree |
| Subgroup description | Treatment believers with low degree of depressive mood <br> Less <br> －believe that treatment is not essential <br> －with negative recovery belief | Pain related concerns，moderate degree of depressive mood <br> More <br> －have work concerns （more believe work will harm，they should not do | The uncomplicated psychological profile <br> Less <br> －sleep less well <br> －have work concerns （less believe work will harm or they should not do normal work or | Sleep well，low degree of depressive mood <br> Less <br> －（None）sleep less well <br> －believe they cannot work till pain treated or should | Treatment believers with sleep issues and moderate degree of depressive mood <br> Less <br> －believe that treatment is not essential | Sleep issues，low degree of pain－ related concern <br> More <br> －（All）sleep less well <br> －had trouble sleeping <br> Less | The complicated psychological profile More <br> －have work concerns （more believe work will harm and that they cannot work till pain treated） <br> －with negative recovery belief | Pain－related concerns，low degree of depression <br> More <br> －believe that treatment is not essential <br> －are not able to decrease pain |  |


|  | - feel socially isolated <br> - feel worried | normal work and cannot work till pain treated) <br> - have felt sad some of the time <br> - felt lacking in energy some of the time | cannot work till pain treated) <br> - with negative recovery belief <br> - feel socially isolated <br> - feel worried <br> - have not enjoyed usual things <br> - more irritable <br> - depressive mood: <br> - have lost interest in daily activities <br> - have felt restless <br> - had bad conscience some or all the time <br> - have felt sad some or all the time <br> - (none) had felt less self-confident all the time or some of the time <br> - (none) had difficulty in concentrating all the time and few some of the time <br> - (none) had suffered from reduced/ increased appetite | not do normal work with present pain <br> - feel worried | More <br> - felt lacking in energy some of the time <br> - had suffered from reduced/increased appetite <br> - had trouble sleeping | - have work concerns (less believe work will harm or they should not do normal work or cannot work till pain treated) | - feel socially isolated <br> - feel worried <br> - rub/holds areas that hurt <br> - have not enjoyed usual things <br> - more irritable <br> - depressive mood: <br> - have lost interest in daily activities <br> - have felt restless <br> - had bad conscience some or all the time <br> - have felt sad some or all the time <br> - felt lacking in energy most of the time <br> - had felt less selfconfident all the time or some of the time <br> - had difficulty in concentrating all the time and few some of the time <br> - had trouble sleeping <br> - had suffered from reduced/increased appetite <br> - had trouble sleeping | - have work concerns (more believe they should not do normal work and cannot work till pain treated) <br> Less <br> - with negative recovery belief <br> - feel socially isolated <br> - feel worried <br> - depressive mood: <br> - have lost interest in daily activities <br> - have felt restless <br> - had bad conscience some or all the time <br> - have felt sad some or all the time <br> - had felt less selfconfident all the time or some of the time <br> - (none) had difficulty in concentrating all the time and few some of the time |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subgroup size, N | 199 (21\%) | 154 (17\%) | 132 (14\%) | 119 (13\%) | 122 (13\%) | 99 (11\%) | 55 (6\%) | 48 (5\%) |  |  |
| Posterior probability, median | $\begin{gathered} 0.98 \\ \text { (IQR=0.88-1.00) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.98 \\ \text { (IQR=0.90-1.00) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.96 \\ \text { (IQR=0.87-1.00) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.97 \\ \text { (IQR=0.89-0.99) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.98 \\ \text { (IQR=0.90-0.99) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.95 \\ \text { (IQR=0.86-0.99) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.99 \\ \text { (IQR=0.96-1.00) } \\ \hline \end{gathered}$ | $\begin{gathered} 0.96 \\ \text { (IQR=0.75-1.00) } \\ \hline \end{gathered}$ |  |  |
| Posterior probability less than 0.70, N | $\begin{gathered} 20 \\ (10 \%) \\ \hline \end{gathered}$ | $\begin{gathered} \hline 13 \\ (8 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 17 \\ (13 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 10 \\ (8 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 10 \\ (8 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 11 \\ (11 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 4 \\ (7 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 9 \\ (19 \%) \\ \hline \end{gathered}$ |  |  |

Bold text indicates characteristic features which mainly identify the respective subgroups
IQR = interquartile range; phys. act = physical activity; RMDQ = Roland-Morris Disability Questionnaire; FABQ, Fear-Avoidance Beliefs Questionnaire; SBT = STarT Back Tool; MDI = Major Depression Inventory
${ }^{\dagger}$ Trichotomised for the descriptive analysis: $0=$ disagree ( $0-2$ ), $1=$ unsure ( 3 ), $2=$ agree ( $4-6$ )
Symbols and light lines: Variables which have similar scoring pattern across subgroups representing an overall feature:
*sleep issues
** pain-related concerns
depressive mood
${ }^{\text {xa }}$ catastrophising
${ }^{\text {uxa }}$ fear avoidance of physical activity

| <: row subgroup is always below column subgroup <br> >: row subgroup is always above column subgroup <br> $X$ : the subgroups are crossing |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Profile | Psych_single 1 | Psych_single 2 | Psych_single 3 | Psych_single 4 | Psych_single 5 | Psych_single 6 | Psych_single 7 |
| Psych_single 2 | > |  |  |  |  |  |  |
| Psych_single 3 | X | < |  |  |  |  |  |
| Psych_single 4 | X | X | X |  |  |  |  |
| Psych_single 5 | X | X | X | X |  |  |  |
| Psych_single 6 | X | X | > | X | X |  |  |
| Psych_single 7 | > | X | X | X | X | X |  |
| Psych_single 8 | X | X | X | X | X | X | X |

Table 4A. Descriptive presentation of the six subgroups identified in the pain domain when using the summary-score strategy

| Variable | Pain_sum 1 | Pain_sum 2 | Pain_sum 3 | Pain_sum 4 | Pain_sum 5 | Pain_sum 6 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Duration of LBP* | $0-2$ weeks duration of LBP <br> 0-2 weeks=86\% <br> 2-4 weeks=10\% <br> 1-3 months=3\% <br> $>3$ months=1\% | $0-2$ weeks duration of LBP <br> 0-2 weeks=81\% <br> 2-4 weeks=15\% <br> 1-3 months=3\% <br> >3 months=1\% | $0-4$ weeks duration of LBP $\begin{gathered} 0-2 \text { weeks=53\% } \\ 2-4 \text { weeks=29\% } \\ 1-3 \text { months }=11 \% \\ >3 \text { months }=7 \% \end{gathered}$ | More than 3 months duration of LBP <br> 0-2 weeks=4\% <br> 2-4 weeks=7\% <br> 1-3 months=31\% <br> >3 months=58\% | ```More than one month duration of LBP 0-2 weeks=13% 2-4 weeks=6% 1-3 months=32% >3 months=49%``` | $0-4$ weeks duration of LBP <br> 0-2 weeks=69\% <br> 2-4 weeks=16\% <br> 1-3 months=9\% <br> $>3$ months=7\% | Ordinal 1=0-2 weeks 2=2-4 weeks 3=1-3 months $4=>3$ months |
| More than $\mathbf{3 0}$ days of LBP last year* | Very few with more than 30 days of back pain last year (7\%) | Very few with more than 30 days of back pain last year (6\%) | Very few with more than 30 days of back pain last year (0\%) | All with more than 30 days of back pain last year (100\%) | Most with more than 30 days of back pain last year (95\%) | Very few with more than 30 days of back pain last year (9\%) | Dichotomous $0=\leq 30 \text { days }$ $1 \text { =>30 days }$ |
| LBP intensity | High intensity LBP (IQR=6-8) | High intensity LBP (IQR=7-8) | Low intensity LBP (IQR=3-4) | Moderate intensity LBP (IQR=4-7) | High intensity LBP (IQR=6-8) | Moderate intensity LBP (IQR=3-8) | Continuous $0=$ no pain 10=worst imaginable pain |
| Leg pain intensity | Most with no leg pain (97\%) <br> Very few with low intensity leg pain (3\%) <br> None with moderate-high intensity leg pain (0\%) | Very few with no leg pain (1\%) <br> Many with low intensity leg pain (62\%) <br> Few with moderate-high intensity leg pain (37\%) | Many with no leg pain (66\%) <br> Few with low intensity leg pain (32\%) <br> Very few with moderate-high intensity leg pain (2\%) | Half with no leg pain (49\%) <br> Half with low intensity leg pain (51\%) <br> None with moderate-high intensity leg pain (0\%) | None with no leg pain (0\%) <br> Very few with low intensity leg pain (17\%) <br> Most with moderate-high intensity leg pain (83\%) | None with no leg pain (0\%) <br> Few with low intensity leg pain (25\%) <br> Many with moderate-high intensity leg pain (75\%) | Ordinal <br> $0=$ no pain 1=mild pain 2=moderate-worst imaginable pain |
| Pain distribution | All with LBP only <br> Only LBP (100\%) <br> LBP and pain in one leg (0\%) <br> LBP and pain in both legs (0\%) <br> Only leg pain (0\%) | Many with LBP only or LBP and pain in one leg <br> Only LBP (56\%) <br> LBP and pain in one leg (36\%) <br> LBP and pain in both legs (8\%) <br> Only leg pain (0\%) | Most with LBP only <br> Only LBP (88\%) <br> LBP and pain in one leg (11\%) LBP and pain in both legs (2\%) Only leg pain (0\%) | Most with LBP only <br> Only LBP (85\%) <br> LBP and pain in one leg (15\%) LBP and pain in both legs (0\%) Only leg pain (0\%) | Very few with LBP only, most with leg pain in one leg <br> Only LBP (15\%) <br> LBP and pain in one leg (67\%) <br> LBP and pain in both legs (15\%) <br> Only leg pain (3\%) | None with LBP only, most with LBP and pain in one leg or only leg pain <br> Only LBP (0\%) <br> LBP and pain in one leg (69\%) <br> LBP and pain in both legs (0\%) Only leg pain (31\%) | Multistate nominal $0=$ low back pain only <br> 1=low back pain and pain in one leg 2=low back pain and pain in both legs 3=only leg pain |
| LBP not dominating | No one LBP not dominating (0\%) | Very few LBP not dominating (2\%) | No one LBP not dominating (0\%) | No one LBP not dominating (0\%) | Few LBP not dominating (23\%) | Most LBP not dominating (98\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| No paraspinal pain onset | Few with no paraspinal onset (31\%) | Few with no paraspinal onset (35\%) | Half with no paraspinal onset (41\%) | Few with no paraspinal onset (36\%) | Half with no paraspinal onset (59\%) | Half with no paraspinal onset (55\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \\ \hline \end{gathered}$ |


| Previous LBP episodes | Half have had more than three episodes $\begin{gathered} \text { None=16\% } \\ 1-3=39 \% \\ >3=45 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=19\% } \\ 1-3=37 \% \\ >3=44 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=19\% } \\ 1-3=37 \% \\ >3=43 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=24\% } \\ 1-3=24 \% \\ >3=52 \% \end{gathered}$ | Many have had more than three episodes $\begin{gathered} \text { None=3\% } \\ 1-3=19 \% \\ >3=78 \% \end{gathered}$ | Half have had more than three episodes <br> None=7\% <br> 1-3=48\% <br> $>3=45 \%$ | Ordinal $0=$ no previous episodes $1=1-3$ previous episodes $2=$ more than 3 previous episodes |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subgroup description | Recent LBP with high degree of back pain severity <br> More <br> - with short duration of LBP <br> - with high intensity LBP <br> - with only LBP | Recent LBP with high degree of back pain severity and Moderate degree of leg pain severity <br> More <br> - with short duration of LBP <br> - with high intensity LBP <br> - with low intensity leg pain | Recent LBP with low degree of back pain severity <br> More <br> - with short duration of LBP <br> - low intensity LBP <br> - with only LBP | Persistent LBP, moderate degree of back pain severity and low degree of leg pain severity <br> More <br> - with long duration of LBP <br> - with moderate intensity LBP <br> - with low intensity leg pain <br> - LBP dominating | Persistent LBP, high degree of back pain severity and moderate-high degree of leg pain severity <br> More <br> - with long duration of LBP <br> - with high intensity LBP <br> - with moderate-high intensity leg pain <br> - with LBP and pain in one leg | Recent LBP, moderate degree of back pain severity, moderate-high degree of leg pain severity, non-dominating LBP <br> More <br> - with short duration of LBP <br> - with moderate-high intensity leg pain <br> - with LBP and pain in one leg OR only leg pain <br> - with LBP not dominating |  |
| Subgroup size, N | 281 (30\%) | 287 (31\%) | 116 (13\%) | 99 (11\%) | 97 (10\%) | $48(5 \%)$ |  |
| Posterior probability, median | $\begin{gathered} 0.97 \\ (\mathrm{IQR}=84-98) \end{gathered}$ | $\begin{gathered} 0.90 \\ \text { (IQR=62-99) } \end{gathered}$ | $\begin{gathered} 0.91 \\ (\mathrm{IQR}=78-98) \end{gathered}$ | $\begin{gathered} 0.97 \\ (\mathrm{IQR}=88-99) \end{gathered}$ | $\begin{gathered} 0.95 \\ \text { (IQR=78-99) } \end{gathered}$ | $\begin{gathered} 0.94 \\ (\text { IQR=87-100) } \end{gathered}$ |  |
| Posterior probability less than 0.70, N | $\begin{gathered} 45 \\ (16 \%) \end{gathered}$ | $\begin{gathered} 119 \\ (41 \%) \end{gathered}$ | $\begin{gathered} 19 \\ (16 \%) \end{gathered}$ | $\begin{gathered} 10 \\ (10 \%) \end{gathered}$ | $\begin{gathered} 15 \\ (15 \%) \end{gathered}$ | $\begin{gathered} 3 \\ (6 \%) \end{gathered}$ |  |

than $\mathbf{0 . 7 0}, \mathrm{N}$
Bold text indicates characteristic features which mainly identify the respective subgroups
LBP = low back pain; IQR = interquartile range
Symbols and light lines: Variables which have similar scoring pattern across subgroups representing an overall feature:
*Duration of LBP

Table 4B. Subgroup by subgroup matrix to count crossing subgroups, pain domain, summary-score strategy

| <: row subgroup is always below column subgroup <br> >: row subgroup is always above column subgroup <br> $X$ : the subgroups are crossing |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Profile | Pain_sum 1 | Pain_sum 2 | Pain_sum 3 | Pain_sum 4 | Pain_sum 5 |
| Pain_sum 2 | X |  |  |  |  |
| Pain_sum 3 | X | X |  |  |  |
| Pain_sum 4 | X | X | X |  |  |
| Pain_sum 5 | X | X | > | X |  |
| Pain_sum 6 | X | X | X | X | X |

Table 5A. Descriptive presentation of the seven subgroups identified in the pain domain when using the single-item strategy

| Variable | Pain_single 1 | Pain_single 2 | Pain_single 3 | Pain_single 4 | Pain_single 5 | Pain_single 6 | Pain_single 7 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Previous LBP episodes | Half have had more than three episodes $\begin{gathered} \text { None=15\% } \\ 1-3=38 \% \\ >3=47 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=19\% } \\ 1-3=37 \% \\ >3=44 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=22\% } \\ 1-3=35 \% \\ >3=42 \% \end{gathered}$ | Many have had more than three episodes $\begin{gathered} \text { None=3\% } \\ 1-3=21 \% \\ >3=76 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=14\% } \\ 1-3=40 \% \\ >3=46 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=25\% } \\ 1-3=23 \% \\ >3=52 \% \end{gathered}$ | Half have had more than three episodes $\begin{gathered} \text { None=8\% } \\ 1-3=49 \% \\ >3=44 \% \end{gathered}$ | Ordinal <br> 0=no previous episodes 1=1-3 previous episodes $2=$ more than 3 previous episodes |
| Duration of LBP* | $0-2$ weeks duration of LBP <br> $0-2$ weeks $=89 \%$ <br> 2-4 weeks=8\% <br> 1-3 months=3\% <br> $>3$ months=<1\% | $0-2$ weeks duration of LBP <br> 0-2 weeks=79\% <br> 2-4 weeks=15\% <br> 1-3 months=4\% <br> >3 months=2\% | $0-4$ weeks duration of LBP <br> 0-2 weeks=65\% <br> 2-4 weeks=22\% <br> 1-3 months=9\% <br> $>3$ months=4\% | More than 1 month duration of pain <br> $0-2$ weeks $=13 \%$ <br> 2-4 weeks=9\% <br> 1-3 months=31\% <br> $>3$ months=46\% | $0-4$ weeks duration of LBP <br> 0-2 weeks=59\% <br> 2-4 weeks=26\% <br> 1-3 months=6\% <br> $>3$ months=9\% | More than 1 month duration of LBP <br> $0-2$ weeks=1\% <br> 2-4 weeks=1\% <br> 1-3 months=33\% <br> $>3$ months=65\% | $0-4$ weeks duration of LBP <br> 0-2 weeks=68\% <br> 2-4 weeks=15\% <br> 1-3 months $=10 \%$ <br> $>3$ months=8\% | Ordinal 1=0-2 weeks 2=2-4 weeks 3=1-3 months $4=>3$ months |
| More than 30 days of LBP last year* | Very few with more than 30 days of back pain last year <br> (7\%) | Very few with more than 30 days of back pain last year <br> (6\%) | Very few with more than 30 days of back pain last year (5\%) | Most with more than 30 days of back pain last year (98\%) | Very few with more than 30 days of back pain last year (15\%) | All with more than 30 days of back pain last year (100\%) | Very few with more than 30 days of back pain last year (5\%) | Dichotomous $0=\leq 30 \text { days }$ $1 \text { =>30 days }$ |
| LBP intensity** | High intensity LBP (IQR=7-9) | High intensity LBP (IQR=7-8) | Moderate intensity LBP (IQR=3-6) | High intensity LBP (IQR=6-8) | Moderate intensity LBP (IQR=4-6) | Moderate intensity LBP (IQR=4-7) | Moderate intensity LBP (IQR=3-7) | $\begin{gathered} \text { Continuous } \\ 0=\text { no pain } \\ 10=\text { worst imaginable pain } \end{gathered}$ |
| Back/leg painful almost all the time (RMDQ-11)** | Many with pain almost all the time <br> (76\%) | Many with pain almost all the time <br> (77\%) | Few with pain almost all the time (30\%) | Most with pain almost all the time <br> (84\%) | Many with pain almost all the time (62\%) | Many with pain almost all the time (61\%) | Many with pain almost all the time (73\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Very-extremely bothersome back pain last 2 weeks (SBT-9)** | Most with high degree of bothersome pain (96\%) | Most with high degree of bothersome pain (98\%) | Very few with high degree of bothersome pain <br> (7\%) | Most with high degree of bothersome pain (89\%) | Few with high degree of bothersome pain (24\%) | Half with high degree of bothersome pain (52\%) | Many with high degree of bothersome pain (63\%) | Dichotomous $0=$ no-moderately bothersome pain $1=$ very-extremely bothersome pain |
| LBP not dominating | No one LBP not dominating (0\%) | Very few LBP not dominating (4\%) | Very few LBP not dominating (1\%) | Few LBP not dominating (25\%) | No one LBP not dominating (0\%) | No one LBP not dominating (0\%) | All LBP not dominating (100\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Leg pain intensity*** | Most with no leg pain (81\%) <br> Very few with low intensity leg pain (19\%) None with moderate-high intensity leg pain (0\%) | Very few with no leg pain <br> (1\%) <br> Half with low intensity leg pain (53\%) <br> Half with moderate-high intensity leg pain (46\%) | Most with no leg pain (88\%) <br> Very few with low intensity leg pain (12\%) None with moderate-high intensity leg pain (0\%) | None with no leg pain (0\%) <br> Few with low intensity leg pain (22\%) <br> Many with moderatehigh intensity leg pain (78\%) | Very few with no leg pain <br> (2\%) <br> Many with low intensity leg pain (71\%) <br> Few with moderate-high intensity leg pain (27\%) | Half with no leg pain (55\%) <br> Half with low intensity leg pain (45\%) <br> None with moderate-high intensity leg pain (0\%) | None with no leg pain (0\%) <br> Few with low intensity leg pain (25\%) <br> Many with moderatehigh intensity leg pain (75\%) | Ordinal <br> $0=$ no pain 1=mild pain 2=moderate-worst imaginable pain |
| Pain has spread down leg(s) at some time last 2 weeks (SBT-1)*** | Very few with spread of pain to leg(s) (3\%) | Most with spread of pain to leg(s) <br> (82\%) | None with spread of pain to leg(s) <br> (0\%) | Most with spread of pain to leg(s) <br> (92\%) | Most with spread of pain to leg(s) <br> (89\%) | Very few with spread of pain to leg(s) (10\%) | All with spread of pain to leg(s) (100\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Pain <br> distribution*** | Most with LBP only <br> Only LBP (99\%) <br> LBP and pain in one leg (<1\%) <br> LBP and pain in both legs (<1\%) | Many with LBP only or LBP and pain in one leg <br> Only LBP (51\%) LBP and pain in one leg (37\%) <br> LBP and pain in both legs | Most with LBP only <br> Only LBP (97\%) LBP and pain in one leg (3\%) <br> LBP and pain in both legs (1\%) | Very few with LBP only, most with leg pain in one leg <br> Only LBP (18\%) LBP and pain in one leg (64\%) | Many with LBP only or LBP and pain in one leg <br> Only LBP (44\%) <br> LBP and pain in one leg (53\%) <br> LBP and pain in both legs | Most with LBP only <br> Only LBP (89\%) LBP and pain in one leg (11\%) <br> LBP and pain in both legs (0\%) | None with LBP only, most with LBP and pain in one leg or only leg pain <br> Only LBP (0\%) <br> LBP and pain in one leg | Multistate nominal <br> O=only low back pain <br> 1=low back pain and pain in one leg <br> 2=low back pain and pain in both legs <br> 3=only leg pain |


|  | Only leg pain (0\%) | $\begin{gathered} (11 \%) \\ \text { Only leg pain (1\%) } \end{gathered}$ | Only leg pain (0\%) | LBP and pain in both legs (14\%) <br> Only leg pain (4\%) | $\begin{gathered} (1 \%) \\ \text { Only leg pain (1\%) } \end{gathered}$ | Only leg pain (0\%) | (69\%) <br> LBP and pain in both legs (0\%) <br> Only leg pain (31\%) |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Pain in shoulder/neck last 2 weeks (SBT-2) | Half with shoulder/neck pain (42\%) | Half with shoulder/neck pain (46\%) | Half with shoulder/neck pain (42\%) | $\square$ shoulder/neck pain (65\%) | Many with shoulder/neck pain (62\%) | Half with shoulder/neck pain (52\%) | Few with shoulder/neck pain (33\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \\ \hline \end{gathered}$ |
| No paraspinal pain onset | Few with no paraspinal onset (31\%) | Few with no paraspinal onset (38\%) | Half with no paraspinal onset <br> (41\%) | Half with no paraspinal onset (55\%) | Few with no paraspinal onset <br> (34\%) | Few with no paraspinal onset <br> (36\%) | Half with no paraspinal onset (52\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Pain caused by physical activity (FABQ-1) ${ }^{\text { }}$ | Half had pain caused by physical activity <br> Disagree=27\% <br> Unsure=28\% <br> Agree=46\% | Half had pain caused by physical activity <br> Disagree=26\% <br> Unsure=27\% <br> Agree=47\% | Half had pain caused by physical activity <br> Disagree=32\% <br> Unsure=25\% <br> Agree=43\% | Half had pain caused by physical activity <br> Disagree=23\% <br> Unsure=33\% <br> Agree=44\% | Half had pain caused by physical activity <br> Disagree=31\% <br> Unsure=22\% <br> Agree=47\% | Few had pain caused by physical activity <br> Disagree=33\% <br> Unsure=31\% <br> Agree=36\% | Few had pain caused by physical activity <br> Disagree=32\% <br> Unsure=34\% <br> Agree=34\% | Ordinal ${ }^{\dagger}$ <br> $0=$ completely disagree 3=unsure 6=completely agree |
| Physical activity makes worse (FABQ-2) ${ }^{\text {a }}$ | Half get worse by physical activity <br> Disagree=24\% <br> Unsure=20\% <br> Agree=56\% | Half get worse by physical activity <br> Disagree=25\% <br> Unsure=21\% <br> Agree=54\% | Few get worse by physical activity <br> Disagree=47\% <br> Unsure=16\% <br> Agree=37\% | Half get worse by physical activity <br> Disagree=23\% <br> Unsure=18\% <br> Agree=59\% | Half get worse by physical activity <br> Disagree=43\% <br> Unsure=13\% <br> Agree=44\% | Half get worse by physical activity <br> Disagree=39\% <br> Unsure=13\% <br> Agree=48\% | Half get worse by physical activity <br> Disagree=37\% <br> Unsure=22\% <br> Agree=41\% | Ordinal ${ }^{\dagger}$ <br> $0=$ completely disagree 3=unsure 6=completely agree |
| Subgroup description | Recent LBP with high degree of back pain severity <br> More <br> - With high intensity LBP and high degree of bothersome pain <br> Less <br> - With long duration of LBP <br> - With leg pain | Recent LBP with high degree of back pain severity and moderate degree of leg pain severity <br> More <br> - With high intensity LBP and high degree of bothersome pain <br> - With leg pain, lowhigh intensity <br> Less <br> - With long duration of LBP | Recent LBP with low degree of back pain severity <br> Less <br> - With pain almost all the time <br> - With leg pain <br> - Get worse with physical activity | Persistent LBP, high degree of back and leg pain severity (and musculoskeletal comorbidity) <br> More <br> - Previous episodes <br> - With long duration of LBP, >30 days last year <br> - With high intensity LBP and high degree of bothersome pain <br> - With pain almost all the time <br> - Moderate-high intensity leg pain <br> - With neck/shoulder pain | Recent LBP with moderate degree of back pain severity, moderate degree of leg pain severity (and often neck/shoulder pain) <br> More <br> - With low intensity leg pain <br> - With neck/shoulder pain | Persistent LBP, moderate degree of back pain severity and low degree of leg pain severity <br> More <br> - With long duration of LBP, >30 days last year <br> Less <br> - With leg pain (if present, was low intensity) | Recent LBP, moderatehigh degree of back pain severity, moderate-high degree of leg pain severity, non-dominating LBP <br> More <br> - With LBP not dominating <br> - Moderate-high intensity leg pain <br> - With only leg pain <br> Less <br> - With neck/ shoulder pain |  |
| Subgroup size, N | 252 (27\%) | 203 (22\%) | 160 (17\%) | 98 (11\%) | 89 (10\%) | 84 (9\%) | 42 (5\%) |  |
| Posterior probability, median | $\begin{gathered} 0.97 \\ (\mathrm{IQR}=80-99) \end{gathered}$ | $\begin{gathered} 0.96 \\ (\mathrm{IQR}=84-98) \end{gathered}$ | $\begin{gathered} 0.97 \\ \text { (IQR=82-100) } \end{gathered}$ | $\begin{gathered} 0.98 \\ (\text { IQR }=88-99) \end{gathered}$ | $\begin{gathered} 0.93 \\ (\mathrm{IQR}=75-99) \end{gathered}$ | $\begin{gathered} 0.96 \\ (\mathrm{IQR}=85-99) \end{gathered}$ | $\begin{gathered} 0.99 \\ (\text { IQR=84-100) } \end{gathered}$ |  |
| Posterior probability less than 0.70, N | $\begin{gathered} 38 \\ (15 \%) \end{gathered}$ | $\begin{gathered} 29 \\ (14 \%) \end{gathered}$ | $\begin{gathered} 20 \\ (13 \%) \end{gathered}$ | $\begin{gathered} 11 \\ (11 \%) \end{gathered}$ | $\begin{gathered} 18 \\ (20 \%) \end{gathered}$ | $\begin{gathered} 8 \\ (10 \%) \end{gathered}$ | $\begin{gathered} 5 \\ (12 \%) \end{gathered}$ |  |

Bold text indicates characteristic features which mainly identify the respective subgroups
LBP = low back pain; IQR=inter quartile range; RMDQ = Roland-Morris Disability Questionnaire; FABQ = Fear-Avoidance Beliefs Questionnaire; SBT = STarT Back Tool
${ }^{\dagger}$ Trichotomised for the descriptive analysis: $0=$ disagree ( $0-2$ ), $1=$ unsure ( 3 ), $2=$ agree ( $4-6$ )
Symbols and light lines: Variables which have similar scoring pattern across subgroups representing an overall feature:
*LBP duration
**Back pain severity
***Leg pain severity
"Pain due to physical activity (not a diverse scoring and therefore not fulfilling the criteria for being a feature)

Table 5B. Subgroup by subgroup matrix to count crossing subgroups, pain domain, single-item strategy
<: row subgroup is always below column subgroup
>: row subgroup is always above column subgroup

| $X$ : the subgroups are crossing |  |
| :--- | :--- |
| Profile | Pain single 1 |

Profile Pain single 1 | Pain_single 2 |
| :--- |
| Pain_single 3 |

Pain_single 3
Pain_single 4
Pain_single 5
Pain_single 6
Pain single 7

| $X$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | $X$ | $X$ |  |  |  |
|  |  |  |  |  |  |
|  | $X$ | $X$ | $>$ |  |  |
|  |  |  |  |  |  |
|  | $X$ | $X$ | $X$ | $<$ |  |
|  |  |  |  |  |  |

Table 6A. Descriptive presentation of the seven subgroups identified in the activity domain when using the summary-score strategy

|  | Act_sum 1 | Act_sum 2 | Act_sum 3 | Act_sum 4 | Act_sum 5 | Act_sum 6 | Act_sum 7 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Best posture to sit | Very few enjoy sitting (8\%) | Very few enjoy sitting (2\%) | Most enjoy sitting <br> (84\%) | None enjoy sitting <br> (0\%) | Few enjoy sitting (28\%) | Very few enjoy sitting (3\%) | Most enjoy sitting (86\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \end{gathered}$ |
| Best activity is not to walk | Few do not enjoy walking (33\%) | Few do not enjoy walking (21\%) | Few do not enjoy walking (35\%) | None do not enjoy walking <br> (0\%) | Very few do not enjoy walking (5\%) | All do not enjoy walking (100\%) | Most do not enjoy walking (93\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Cannot work with present pain (FABQ13) | Most cannot work with present pain <br> Compl.disagree (1\%) Unsure (12\%) Compl. agree (88\%) | None cannot work with present pain <br> Compl.disagree (100\%) <br> Unsure (0\%) <br> Compl. agree (0\%) | Few cannot work with present pain <br> Compl.disagree (51\%) Unsure (13\%) Compl. agree (36\%) | Very few cannot work with present pain <br> Compl.disagree (82\%) Unsure (11\%) Compl. agree (8\%) | None cannot work with present pain <br> Compl.disagree (100\%) <br> Unsure (0\%) <br> Compl. agree (0\%) | Very few cannot work with present pain <br> Compl.disagree (95\%) Unsure (3\%) Compl. agree (1\%) | Few cannot work with present pain <br> Compl.disagree (54\%) Unsure (15\%) Compl. agree (31\%) | $\begin{gathered} \text { Ordinal } \\ \begin{array}{c} \text { O=disagree } \\ 1=\text { unsure } \end{array} \\ 2=\text { agree } \end{gathered}$ |
| Roland-Morris summary score | High degree of disability (IQR=70-83) | High degree of disability (IQR=57-70) | Moderate degree of disability (IQR=39-52) | Low degree of disability (IQR=30-39) | Very low degree of disability (IQR=9-17) | Low degree of disability (IQR=17-43) | High degree of disability (IQR=74-83) | Continuous $0=$ no disability 100=severe disability |
| Subgroup description | High degree of disability, most cannot work | High degree of disability, but very few cannot work | Moderate degree of disability, few cannot work - more prefer both sitting and walking | Low degree of disability, very few cannot work | Very low degree of disability, none cannot work | Low degree of disability, walking (and sitting) limitations, very few cannot work | High degree of disability, walking limitations (prefer sitting), half cannot work |  |
| Subgroup size, N | 226 (24\%) | 191 (21\%) | 113 (12\%) | 136 (15\%) | 101 (11\%) | 101 (11\%) | 60 (6\%) |  |
| Posterior probability, median | $\begin{gathered} 0.76 \\ (\mathrm{IQR}=60-92) \end{gathered}$ | $\begin{gathered} 0.63 \\ (\mathrm{IQR}=49-79) \\ \hline \end{gathered}$ | $\begin{gathered} 0.66 \\ (\text { IQR }=49-75) \end{gathered}$ | $\begin{gathered} 0.67 \\ (\mathrm{IQR}=58-82) \end{gathered}$ | $\begin{gathered} 0.87 \\ (\mathrm{IQR}=79-95) \end{gathered}$ | $\begin{gathered} 0.69 \\ (\mathrm{IQR}=56-80) \\ \hline \end{gathered}$ | $\begin{gathered} 0.68 \\ (\mathrm{IQR}=51-78) \end{gathered}$ |  |
| Posterior probability less than 0.70, N | $\begin{gathered} 75 \\ (33 \%) \end{gathered}$ | $\begin{gathered} 110 \\ (58 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 71 \\ (63 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 72 \\ (53 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 21 \\ (21 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 51 \\ (50 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 31 \\ (52 \%) \\ \hline \end{gathered}$ |  |

Bold text indicates characteristic features which mainly identify the respective subgroups
IQR = interquartile range; Roland-Morris summary score: Roland-Morris Disability Questionnaire, summary score (proportional recalculation)

Table 6B. Subgroup by subgroup matrix to count crossing subgroups, activity domain, summary-score strategy

| <: row subgroup is always below column subgroup <br> >: row subgroup is always above column subgroup <br> $X$ : the subgroups are crossing |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Profile | Act_sum 1 | Act_sum 2 | Act_sum 3 | Act_sum 4 | Act_sum 5 | Act_sum 6 |
| Act_sum 2 | < |  |  |  |  |  |
| Act_sum 3 | X | X |  |  |  |  |
| Act_sum 4 | < | X | < |  |  |  |
| Act_sum 5 | X | X | < | X |  |  |
| Act_sum 6 | X | X | X | X | X |  |
| Act_sum 7 | X | > | > | > | > | X |

## Table 7A. Descriptive presentation of the seven subgroups identified in the activity domain when using the single-item strategy

| Subgroup name <br> Variable | Act_single 1 | Act_single 2 | Act_single 3 | Act_single 4 | Act_single 5 | Act_single 6 | Act_single 7 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Best activity is not to walk* | Half do not enjoy walking (47\%) | Few do not enjoy walking (25\%) | Few do not enjoy walking (29\%) | Few do not enjoy walking (33\%) | Few do not enjoy walking (27\%) | Few do not enjoy walking (26\%) | Most do not enjoy walking (83\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Only stand for short periods of time (RMDQ-8)* | Half only stand for short periods (59\%) | Very few only stand for short periods (18\%) | Very few only stand for short periods (7\%) | Very few only stand for short periods (3\%) | Very few only stand for short periods (5\%) | Very few only stand for short periods (16\%) | Many only stand for short periods (61\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \end{gathered}$ |
| Only walk short distances (RMDQ- 14)* | Most only walk short distances (98\%) | Few only walk short distances (21\%) | Very few only walk short distances <br> (1\%) | Very few only walk short distances (1\%) | Very few only walk short distances <br> (1\%) | Most only walk short distances (16\%) | All only walk short distances (100\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Only walked short distances (SBT-3)* | Many have only walked short distances (69\%) | Few have only walked short distances (27\%) | Very few have only walked short distances (2\%) | Very few have only walked short distances (7\%) | Very few have only walked short distances (3\%) | Very few have only walked short distances (19\%) | Most have only walked short distances (86\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { disagree } \\ 1=\text { agree } \end{gathered}$ |
| Use handrail to get upstairs (RMDQ-5) | Most use handrail to get upstairs (88\%) | Half use handrail to get upstairs (51\%) | Very few use handrail to get upstairs (8\%) | Very few use handrail to get upstairs (11\%) | Few use handrail to get upstairs $(35 \%)$ | Few use handrail to get upstairs (33\%) | Half use handrail to get upstairs <br> (47\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Hold on to something to get out of an easy chair (RMDQ-6)** | Most hold on to something to get out of an easy chair (94\%) | Many hold on to something to get out of an easy chair (79\%) | None hold on to something to get out of an easy chair (0\%) | Few hold on to something to get out of an easy chair (20\%) | Many hold on to something to get out of an easy chair (68\%) | Few hold on to something to get out of an easy chair (33\%) | Few hold on to something to get out of an easy chair (31\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Difficult to get out of a chair (RMDQ-10)** | Most with difficulties getting out of a chair (96\%) | Most with difficulties getting out of a chair (95\%) | Very few with difficulties getting out of a chair (1\%) | Few with difficulties getting out of a chair (25\%) | Many with difficulties getting out of a chair (72\%) | Few with difficulties getting out of a chair (33\%) | Few with difficulties getting out of a chair (22\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \\ \hline \end{gathered}$ |
| Difficult to turn over in bed (RMDQ- $\text { 12) }{ }^{* * *}$ | Most with difficulties turning in bed (90\%) | Most with difficulties turning in bed (84\%) | Few with difficulties turning in bed (21\%) | Half with difficulties turning in bed (40\%) | Half with difficulties turning in bed (53\%) | Half with difficulties turning in bed (40\%) | Half with difficulties turning in bed (53\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Try not to bend or kneel down (RMDQ-9)*** | Most try not to bend or kneel down (92\%) | Most try not to bend or kneel down (80\%) | Few try not to bend or kneel down (19\%) | Half try not to bend or kneel down (55\%) | Half try not to bend or kneel down (58\%) | Half try not to bend or kneel down (59\%) | Half try not to bend or kneel down (51\%) | $\begin{gathered} \text { Dichotomous } \\ \begin{array}{c} 0=\text { no } \\ 1=y e s ~ \end{array} \\ \hline \end{gathered}$ |
| Dressed more slowly last two weeks (SBT4) ${ }^{\text {x }}$ | Most have dressed more slowly (81\%) | Most have dressed more slowly (96\%) | Very few have dressed more slowly (10\%) | All have dressed more slowly (100\%) | Very few have dressed more slowly (19\%) | Few have dressed more slowly (25\%) | Half have dressed more slowly (43\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { disagree } \\ 1=\text { agree } \end{gathered}$ |
| Get dressed more slowly (RMDQ-7) ${ }^{\text { }}$ | Most get dressed more slowly (98\%) | Most get dressed more slowly (99\%) | Very few get dressed more slowly (1\%) | Most get dressed more slowly (98\%) | Few get dressed more slowly (34\%) | Very few get dressed more slowly (16\%) | Few get dressed more slowly (33\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \end{gathered}$ |
| Trouble putting on socks (RMDQ-13) ${ }^{\text { }}$ | Most have trouble putting on socks (95\%) | Most have trouble putting on socks (96\%) | Very few have trouble putting on socks (3\%) | Most have trouble putting on socks (85\%) | Half have trouble putting on socks (50\%) | Few have trouble putting on socks (27\%) | Few have trouble putting on socks (35\%) | $\begin{gathered} \text { Dichotomous } \\ \begin{array}{c} 0=\text { no } \\ 1=y e s ~ \end{array} \\ \hline \end{gathered}$ |
| Walk more slowly (RMDQ-3) ${ }^{\text {Ra }}$ | All walk more slowly (100\%) | Most walk more slowly (82\%) | Very few walk more slowly (16\%) | Few walk more slowly (33\%) | Half walk more slowly (44\%) | Half walk more slowly (49\%) | Most walk more slowly (94\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Go upstairs more slowly (RMDQ-18) ${ }^{\text {aR }}$ | All go upstairs more slowly (100\%) | Many go upstairs more slowly (78\%) | Very few go upstairs more slowly (14\%) | Few go upstairs more slowly (26\%) | Half go upstairs more slowly (44\%) | Half go upstairs more slowly (48\%) | Many go upstairs more slowly (73\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Avoid heavy jobs around the house (RMDQ-16) ${ }^{\text {xag }}$ | Most avoid heavy jobs (99\%) | Most avoid heavy jobs (86\%) | Few avoid heavy jobs (27\%) | Half avoid heavy jobs (64\%) | Half avoid heavy jobs (47\%) | Most avoid heavy jobs (98\%) | Most avoid heavy jobs (92\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \end{gathered}$ |
| Do less daily work around the house (RMDQ-22) ${ }^{\text {双 }}$ | Most do less of the daily work <br> (96\%) | Most do less of the daily work <br> (80\%) | Very few do less of the daily work (10\%) | Few do less of the daily work <br> (37\%) | Very few do less of the daily work (9\%) | Most do less of the daily work (99\%) | Many do less of the daily work (65\%) | $\begin{gathered} \text { Dichotomous } \\ \begin{array}{c} 0=\text { no } \\ 1=y e s ~ \end{array} \end{gathered}$ |
| Not doing usual jobs | Most are not doing any | Half are not doing any | Very few are not doing | Few are not doing any | Very few are not doing | Many are not doing any | Half are not doing any | Dichotomous |


| around the house $\text { (RMDQ-4) }{ }^{\text {zuß }}$ | usual jobs (85\%) | usual jobs (60\%) | $\begin{gathered} \text { any usual jobs } \\ (9 \%) \\ \hline \end{gathered}$ | usual jobs (31\%) | $\begin{gathered} \text { any usual jobs } \\ (17 \%) \end{gathered}$ | usual jobs (73\%) | usual jobs (45\%) | $\begin{aligned} & 0=\text { no } \\ & 1=\text { yes } \end{aligned}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Cannot do physical activities which (might) make worse (FABQ-5) ${ }^{\dagger}$ | Many cannot do physical activities which (might) make my pain worse <br> Disagree $=18 \%$ <br> Unsure=22\% <br> Agree=60\% | Half cannot do physical activities which (might) make my pain worse <br> Disagree=33\% <br> Unsure=21\% <br> Agree=46\% | Very few cannot do physical activities which (might) make my pain worse <br> Disagree=58\% <br> Unsure=28\% <br> Agree=14\% | Very few cannot do physical activities which (might) make my pain worse <br> Disagree=63\% <br> Unsure=22\% <br> Agree=15\% | Few cannot do physical activities which (might) make my pain worse <br> Disagree=57\% <br> Unsure=18\% <br> Agree=25\% | Half cannot do physical activities which (might) make my pain worse <br> Disagree=31\% <br> Unsure=28\% <br> Agree=41\% | Few cannot do physical activities which (might) make my pain worse <br> Disagree=42\% <br> Unsure=21\% <br> Agree=38\% | Ordinal ${ }^{\dagger}$ <br> $0=$ completely disagree 3=unsure 6=completely agree |
| Cannot work with present pain <br> (FABQ-13) | Half cannot work with present pain <br> Disagree=33\% Unsure=9\% Agree=58\% | Few cannot work with present pain <br> Disagree=68\% <br> Unsure=7\% <br> Agree=25\% | Very few cannot work with present pain <br> Disagree=91\% Unsure=5\% Agree=4\% | Very few cannot work with present pain <br> Disagree=91\% Unsure=4\% Agree=5\% | Very few cannot work with present pain <br> Disagree=81\% Unsure=7\% Agree=12\% | Few cannot work with present pain <br> Disagree=63\% <br> Unsure=9\% <br> Agree=28\% | Few cannot work with present pain <br> Disagree=70\% <br> Unsure=5\% <br> Agree=24\% | Ordinal $0=$ disagree 1=unsure 2=agree |
| Best posture to sit | Few enjoy sitting (24\%) | Few enjoy sitting (21\%) | Few enjoy sitting (23\%) | Very few enjoy sitting (12\%) | Very few enjoy sitting (18\%) | Few enjoy sitting (33\%) | Few enjoy sitting (29\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Stay in bed most of the time (RMDQ-19) | Very few stay in bed (19\%) | Very few stay in bed (2\%) | Very few stay in bed (0\%) | Very few stay in bed (0\%) | Very few stay in bed (1\%) | Very few stay in bed (1\%) | Very few stay in bed (4\%) | $\begin{gathered} \hline \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \end{gathered}$ |
| Change position frequently (RMDQ-2) | Most change position frequently (92\%) | Most change position frequently (92\%) | Many change position frequently (71\%) | Most change position frequently (83\%) | Most change position frequently (90\%) | Most change position frequently (84\%) | Most change position frequently (92\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=y e s \end{gathered}$ |
| Subgroup description | Very high degree of disability (transfer/climbing, bending/turning, walking, dressing, household, work) <br> More <br> - with walking limitations (do not enjoy walking, only stand for a short period of time, have only walked and walks only short distances) <br> - use handrail to get upstairs <br> - with difficulties getting out of a chair <br> - with difficulties turning over in bed <br> - try not to bend or kneel down <br> - with dressing problems <br> - walk slowly | Very high degree of disability, but no walking distance limitation <br> More <br> - use handrail to get upstairs <br> - with difficulties getting out of a chair <br> - with difficulties turning over in bed <br> - try not to bend or kneel down <br> - with dressing problems <br> - walk slowly <br> - with difficulties doing household duties | Very low degree of disability <br> Less <br> - with walking limitation <br> - Change position frequently <br> - use handrail to get upstairs <br> - with difficulties getting out of a chair <br> - with difficulties turning over in bed <br> - try not to bend or kneel down <br> - with dressing problems <br> - walk slowly <br> - with difficulties doing household duties <br> - cannot do physical activities which make pain worse <br> - cannot work with present pain | Low degree of disability, but dressing problems <br> More <br> - with dressing problems <br> Less <br> - with walking limitation <br> - cannot do physical activities which make pain worse <br> - cannot work with present pain <br> - enjoy sitting | Moderate degree of disability, no walking distance limitations (transfer and climbing problems, no trouble with normal household duties) <br> More <br> - with difficulties getting out of a chair <br> Less <br> - with walking limitation <br> - cannot do physical activities which make pain worse <br> - cannot work with present pain | Low degree of disability, but difficulties in household duties <br> More <br> - with difficulties doing household duties | Moderate degree of disability, high degree of walking limitations (speed and distance) <br> More <br> - with walking limitation (do not enjoy walking, only stand for a short period of time, have only walked and walks only short distances) <br> - use handrail to get upstairs <br> - walk slowly <br> - avoid heavy jobs |  |


|  | - with difficulties doing household duties <br> - cannot do physical activities which make pain worse <br> - cannot work with present pain <br> - stay in bed |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subgroup size, N | 254 (27\%) | 223 (24\%) | 137 (15\%) | 105 (11\%) | 79 (9\%) | 81 (9\%) | 49 (5\%) |  |
| Posterior probability, median | $\begin{gathered} 0.98 \\ (\mathrm{IQR}=88-100) \\ \hline \end{gathered}$ | $\begin{gathered} 0.95 \\ \text { (IQR=83-99) } \end{gathered}$ | $\begin{gathered} 0.99 \\ (\mathrm{IQR}=92-100) \\ \hline \end{gathered}$ | $\begin{gathered} 0.95 \\ (\text { IQR }=80-99) \\ \hline \end{gathered}$ | $\begin{gathered} 0.96 \\ (\mathrm{IQR}=78-100) \\ \hline \end{gathered}$ | $\begin{gathered} 0.93 \\ (\mathrm{IQR}=87-98) \\ \hline \end{gathered}$ | $\begin{gathered} 0.96 \\ \text { (IQR=85-99) } \\ \hline \end{gathered}$ |  |
| Posterior probability less than 0.70, N | $\begin{gathered} 27 \\ (11 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 30 \\ (13 \%) \\ \hline \end{gathered}$ | $\begin{gathered} \hline 13 \\ (9 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 18 \\ (17 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 15 \\ (19 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 12 \\ (15 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 5 \\ (10 \%) \\ \hline \end{gathered}$ |  |

Bold text indicates characteristic features which mainly identify the respective subgroups
RMDQ = Roland-Morris Disability Questionnaire; FABQ = Fear-Avoidance Beliefs Questionnaire; SBT = STarT Back Tool; IQR=interquartile range
${ }^{\dagger}$ Trichotomised for the descriptive analysis: $0=$ disagree ( $0-2$ ), $1=$ unsure ( 3 ), $2=$ agree ( $4-6$ )
Symbols and light lines: Variables which have similar scoring pattern across subgroups representing an overall feature:
*Walking distance limitations
**Transfer and climbing problems
***Bending/turning challenges
Dressing problems
${ }^{2 x}$ Walking speed limitations
${ }^{104}$ Difficulties in household duties
${ }^{\dagger}$ Cannot work with present pain

Table 7B. Subgroup by subgroup matrix to count crossing subgroups, activity domain, single-item strategy

| <: row subgroup is always below column subgroup <br> >: row subgroup is always above column subgroup <br> $X$ : the subgroups are crossing |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Profile | Act_single 1 | Act_single 2 | Act_single 3 | Act_single 4 | Act_single 5 | Act_single 6 |
| Act_single 2 | X |  |  |  |  |  |
| Act_single 3 | < | X |  |  |  |  |
| Act_single 4 | X | X | X |  |  |  |
| Act_single 5 | < | X | X | X |  |  |
| Act_single 6 | X | X | X | X | X |  |
| Act single 7 | X | X |  | X | X | X |

## Table 8A. Descriptive presentation of the five subgroups identified in the participation domain when using the summary-score strategy

|  | Part_sum 1 | Part_sum 2 | Part_sum 3 | Part_sum 4 | Part_sum 5 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Days with sick leave last month | Most with no sick leave (93\%) Very few with 2-5 days of sick leave (7\%) | Many with no sick leave (66\%) <br> Few with 2-5 days of sick leave (32\%) | Many with no sick leave (71\%) <br> Few with 2-5 days of sick leave (26\%) | Many with no sick leave (66\%) Few with 2-5 days of sick leave (24\%) <br> Very few with 6-30 days of sick leave (11\%) (but more compared to the other profiles) | Many with no sick leave (72\%) <br> Few with 2-5 days of sick leave (27\%) | Ordinal 0=0 days 1=1-5 days (workweek) 2=6-31 days |
| FABQ-work subscale | Very low degree of fear avoidance beliefs (IQR=3-6) | Low degree of fear avoidance beliefs (IQR=9-13) | Moderate degree of fear avoidance beliefs (IQR=18-22) | High degree of fear avoidance beliefs (IQR=27-32) | Low degree of fear avoidance beliefs (IQR=11-17) | Continuous <br> $0=$ no fear avoidance beliefs <br> 38=high degree of fear avoidance beliefs |
| Physical workload | Sitting and walking at work <br> Few only sit at work (34\%) Half sit and walk at work (54\%) Very few have light physical load (9\%) <br> Very few have heavy physical load (3\%) | Sitting and walking at work <br> None only sit at work (0\%) <br> Half sit and walk at work (57\%) <br> Few have light physical load (46\%) <br> Very few have heavy physical load (10\%) | Low physical load <br> None only sit at work (0\%) <br> Few sit and walk at work (21\%) <br> Half have light physical load (46\%) <br> Few have heavy physical load (33\%) | High physical load <br> None only sit at work (0\%) Very few sit and walk at work (3\%) Very few have light physical load (13\%) <br> Most have heavy physical load (84\%) | All only sit at work <br> All only sit at work (100\%) None sit and walk at work (0\%) None have light physical load (0\%) None have heavy physical load (0\%) | Ordinal 1=sitting <br> 2=sitting and walking 3=light physical load 4=heavy physical load |
| Subgroup description | Very low degree of fear avoidance beliefs about work, low degree of physical workload | Low degree of fear avoidance beliefs about work, moderate degree of physical workload | Moderate degree of fear avoidance beliefs about work, high physical workload | High degree of fear avoidance beliefs about work, very high degree of physical workload <br> More <br> - with sick leave (>5 days) <br> - with high degree of fear avoidance beliefs (work) <br> - with heavy physical work load | Low degree of fear avoidance beliefs about work, very low degree of physical workload |  |
| Subgroup size, N | 365 (39\%) | 151 (16\%) | 193 (21\%) | 122 (13\%) | 97 (10\%) |  |
| Posterior probability, median | $\begin{gathered} 0.81 \\ (\mathrm{IQR}=54-93) \end{gathered}$ | $\begin{gathered} 0.80 \\ (\mathrm{IQR}=67-88) \end{gathered}$ | $\begin{gathered} 0.84 \\ (\mathrm{IQR}=64-91) \end{gathered}$ | $\begin{gathered} 0.88 \\ \text { (IQR=55-99) } \end{gathered}$ | $\begin{gathered} 0.68 \\ (55-81) \\ \hline \end{gathered}$ |  |
| Posterior probability less than 0.70, N | $\begin{gathered} \hline 142 \\ (39 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 43 \\ (28 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 54 \\ (28 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 43 \\ (35 \%) \\ \hline \end{gathered}$ | $\begin{gathered} 52 \\ (54 \%) \\ \hline \end{gathered}$ |  |

Bold text indicates characteristic features which mainly identify the respective subgroups
IQR = interquartile range; FABQ = Fear-Avoidance Beliefs Questionnaire

Table 8B. Subgroup by subgroup matrix to count crossing subgroups, participation domain, summary-score strategy

| <: row subgroup is always below column subgroup |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: |
| >: row subgroup is always above column subgroup |  |  |  |  |
| X: the subgroups are crossing |  |  |  |  |

## Table 9A. Descriptive presentation of the seven subgroups identified in the participation domain when using the single-item strategy

| Variable $\quad$Subgroup <br> name | Part_single 1 | Part_single 2 | Part_single 3 | Part_single 4 | Part_single 5 | Part_single 6 | Part_single 7 | Scale |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Days with sick leave last month* | Most with no sick leave (92\%) <br> Very few with 2-5 days of sick leave (8\%) | Most with no sick leave (94\%) <br> Very few with 2-5 days of sick leave (6\%) | Most with no sick leave (84\%) <br> Very few with 2-5 days of sick leave (16\%) | Few with no sick leave (33\%) <br> Many with 2-5 days of sick leave (64\%) <br> Very few with 6-31 days of sick leave (4\%) | Many with no sick leave (68\%) <br> Few with 2-5 days of sick leave (30\%) <br> Very few with 6-31 days of sick leave (1\%) | Many with no sick leave (77\%) <br> Few with 2-5 days of sick leave (20\%) <br> Very few with 6-31 days of sick leave (3\%) | Few with no sick leave (22\%) <br> Half with 2-5 days of sick leave (52\%) <br> Few with 6-31 days of sick leave (26\%) | $\begin{gathered} \text { Ordinal } \\ 0=0 \text { days } \\ 1=1-5 \text { days (workweek) } \\ 2=6-31 \text { days } \end{gathered}$ |
| Decreased sexual activity (RMDQ-20)* | Few with decreased sexual activity (28\%) | Few with decreased sexual activity (20\%) | Few with decreased sexual activity (25\%) | Many with decreased sexual activity (79\%) | Half with decreased sexual activity (43\%) | Few with decreased sexual activity (26\%) | Many with decreased sexual activity (74\%) | Dichotomous $\begin{aligned} & 0=\text { no } \\ & 1=\text { yes } \end{aligned}$ |
| Stay home most of the time (RMDQ-1)* | Very few stay home most of the time (9\%) | None stay home most of the time (0\%) | Very few stay home most of the time (2\%) | Most stay home most of the time (89\%) | Few stay home most of the time (29\%) | Very few stay home most of the time (10\%) | Most stay home most of the time (86\%) | $\begin{gathered} \text { Dichotomous } \\ 0=\text { no } \\ 1=\text { yes } \\ \hline \end{gathered}$ |
| Work is too heavy (FABQ-9) | None believe work is too heavy <br> Disagree=100\% <br> Agree=0\% | Few believe work is too heavy <br> Disagree=74\% <br> Unsure=19\% <br> Agree=7\% | Half believe work is too heavy <br> Disagree=19\% <br> Unsure=23\% <br> Agree=58\% | Few believe work is too heavy <br> Disagree=71\% <br> Unsure=9\% <br> Agree=19\% | None believe work is too heavy <br> Disagree=99\% <br> Unsure=1\% <br> Agree=0\% | None believe work is too heavy $\begin{gathered} \text { Disagree=100\% } \\ \text { Agree=0\% } \end{gathered}$ | Half believe work is too heavy <br> Disagree=29\% <br> Unsure=13\% <br> Agree=58\% | Ordinal 0=disagree 1=unsure 2=agree |
| Work makes/would make pain worse (FABQ-10) | None believe work makes pain worse $\begin{gathered} \text { Disagree=100\% } \\ \text { Agree=0\% } \end{gathered}$ | Few believe work makes pain worse <br> Disagree=22\% <br> Unsure=54\% <br> Agree=24\% | Most believe work makes pain worse <br> Disagree=2\% <br> Unsure=12\% <br> Agree=86\% | Few believe work makes pain worse <br> Disagree=41\% <br> Unsure=36\% <br> Agree=24\% | Half believe work makes pain worse <br> Disagree=32\% <br> Unsure=26\% <br> Agree=42\% | None believe work makes pain worse <br> Disagree=94\% Unsure=6\% Agree=0\% | Most believe work makes pain worse <br> Disagree=0\% <br> Unsure=11\% <br> Agree=89\% | Ordinal $0=$ disagree 1=unsure 2=agree |
| Work-aggravated pain (FABQ-7) | None believe workaggravated pain <br> Disagree=93\% Unsure=7\% Agree=0\% | Few believe workaggravated pain <br> Disagree=35\% <br> Unsure=51\% <br> Agree=14\% | Most believe workaggravated pain <br> Disagree=0\% <br> Unsure=17\% <br> Agree=83\% | Very few believe workaggravated pain <br> Disagree=65\% <br> Unsure=29\% <br> Agree=6\% | Most believe workaggravated pain <br> Disagree=0\% <br> Unsure=8\% <br> Agree=92\% | Few believe workaggravated pain <br> Disagree=44\% Unsure=31\% Agree=24\% | Most believe workaggravated pain <br> Disagree=0\% <br> Unsure=13\% <br> Agree=88\% | Ordinal <br> $0=$ disagree <br> 1=unsure <br> 2=agree |
| Pain caused by work/accident at work (FABQ-6) | None believe pain caused by work/accident at work <br> Disagree=100\% Agree=0\% | Very few believe pain caused by work/accident at work <br> Disagree=69\% <br> Unsure=28\% <br> Agree=3\% | Many believe pain caused by work/accident at work <br> Disagree=20\% <br> Unsure=18\% <br> Agree=61\% | Very few believe pain caused by work/accident at work Disagree=74\% Unsure $=20 \%$ Agree $=6 \%$ | Few believe pain caused by work/accident at work <br> Disagree=40\% <br> Unsure=29\% <br> Agree=31\% | Most believe pain caused by work/accident at work <br> Disagree=0\% <br> Unsure=10\% <br> Agree=90\% | Many believe pain caused by work/accident at work <br> Disagree=13\% <br> Unsure=14\% <br> Agree=73\% | Ordinal $0=$ disagree 1=unsure 2=agree |
| Physical workload | Sitting and walking at work <br> Few only sit at work (30\%) <br> Half sit and walk at work (50\%) <br> Very few have light physical load (15\%) <br> Very few have heavy physical load | Sitting and walking / low physical load <br> Few only sit at work (20\%) <br> Half sit and walk at work (41\%) <br> Few have light physical load <br> (24\%) <br> Very few have heavy physical load | Low-high physical load <br> Very few only sit at work (5\%) <br> Very few sit and walk at work <br> (11\%) <br> Few have light physical load (23\%) <br> Many have heavy physical load | Low physical load (unspecific) <br> Very few only sit at work <br> (17\%) <br> Few sit and walk at work <br> (27\%) <br> Few have light physical <br> load <br> (30\%) <br> Few have heavy physical load | Sit at work <br> Many only sit at work (77\%) <br> Few sit and walk at work (21\%) <br> Very few have light physical load (1\%) <br> None have heavy physical load (0\%) | Sitting and walking / low physical load <br> Very few only sit at work (3\%) <br> Few sit and walk at work (32\%) <br> Few have light physical load <br> (36\%) <br> Few have heavy physical load | Low-high physical load <br> None only sit at work (0\%) <br> Very few sit and walk at work <br> (9\%) <br> Few have light physical load (29\%) <br> Many have heavy physical load | Ordinal 1=sitting <br> 2=sitting and walking 3=light physical load 4=heavy physical load |



IQR=interquartile range; FABQ-work = Fear-Avoidance Beliefs Questionnaire, work subscale
Symbols and light lines: Variables which have similar scoring pattern across subgroups representing an overall feature
*Social participation limitations

Table 9B. Subgroup by subgroup matrix to count crossing subgroups, participation domain, single-item strategy

| <: row subgroup is always below column subgroup <br> >: row subgroup is always above column subgroup <br> $X$ : the subgroups are crossing |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Profile | Part_single 1 | Part_single 2 | Part_single 3 | Part_single 4 | Part_single 5 | Part_single 6 |
| Part_single 2 | X |  |  |  |  |  |
| Part_single 3 | X | > |  |  |  |  |
| Part_single 4 | > | X | X |  |  |  |
| Part_single 5 | X | X | X | X |  |  |
| Part_single 6 | X | X | X | X | X |  |
| Part_single 7 | > | > | X | X | > | X |

