**Table E20. Data abstraction of randomized controlled trials of psychological therapies**

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number**  **Randomized, Analyzed Attrition** | **Intervention** | **Study Participants** | **Duration of Pain (acute, subacute, chronic)** |
| **Behavioral therapy versus waiting list control** |  |  |  |  |  |  |
| Siemonsma, 2013 | Netherlands  Single center Outpatient rehabilitation center | Age 18-70 years;  nonspecific low back pain with or without radiation to legs ≥ 3 months; current episode of back pain < 5  years; limitations of activity (RMDA score > 3); no previous multidisciplinary treatment for chronic low back pain  Exclude: involvement in litigation for pain; serious psychological or psychiatric problems; substance abuse interfering with treatment; pregnancy | Randomized:  156  Analyzed: 139  Attrition:89% (136/156) at 18 weeks | A: Cognitive treatment of illness  perceptions (n=104): 10-14 one hour individual treatment sessions provided by physical or occupational therapist; treatment mapped existing illness perceptions, challenged maladaptive illness perceptions, formulated, tested, and  strengthened alternative illness perceptions  B: Waiting list control (no treatment, no co-interventions permitted) (n=52); note that patients expected to enter cognitive treatment therapy at end of 18 weeks | A vs. B  Mean age: 45 vs. 47 years Female: 54% vs. 60% Race: Not reported  Baseline pain (0-100 VAS): 56 vs.  56 (mean)  Baseline function (0-24 RDQ): 12.2 vs. 12.7 (mean)  Other characteristics:  Anxiety (0-24 HADS): 5.5 vs. 5.0 (median)  Depression (0-24 HADS): 5.0 vs.  4.0  Overall complaints (90-450 SCL-  90): 132 vs. 126 (median)  Fear of movement (17-68 TSK-R):  29.1 vs. 28.3  p>0.05 between groups for all baseline characteristics | Eligibility: chronic:  ≥ 3 months;  Median duration (A vs. B): 60 vs. 72 months |

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| **Author, Year** | **Duration of**  **Followup** | **Results** | **Adverse Events**  **Including Withdrawals** | **Funding Source** | **Quality**  **Rating** |
| **Behavioral therapy versus waiting list control** |  |  |  |  |  |
| Siemonsma, 2013 | Post-  treatment | A vs. B  **Activity-specific pain (mean, 0 to 100 PSC):** ~76 vs. ~70 at baseline, ~44 vs. ~64 post-treatment (values estimated from graph)  **Activity-specific pain (mean improvement from baseline, 0 to 100 PSC):**  -19.1 (95% CI -24.3 to -13.9) vs. -5.2 (95% CI -14.7 to 4.2) (p=0.018) post- treatment (similar results for adjusted analysis)  **Activity-specific pain (% of patients with clinically relevant change: decrease of 18 to 24 mm)**: 49% (46/93) vs. 26% (12/46) post-treatment (OR 2.77 (95% CI 1.28 to 6.01))  **Function (0-100 QBPDS):** 40.4 vs. 40.3 at baseline; 36.9 vs. 38.7 post-  treatment (p=0.27)  **Illness perception, time line/duration (0-30 IPQ):** 23.6 vs. 23.3 at baseline; 23.9 vs. 23.5 post-treatment (p=0.741)  **Illness perception, time line cyclical nature (4-20 IPQ)**: 13.6 vs. 13.0 at baseline, 14.1 vs. 12.4 post-treatment (p=0.004)  **Illness perception, consequences (6-30 IPQ):** 19.0 vs. 18.2 at baseline,  17.7 vs. 18.2 post-treatment (p=0.063)  **Illness perception, personal control (6-30 IPQ)**: 19.1 vs. 19.2 at baseline,  21.1 vs. 18.9 post-treatment (p=0.001)  **Illness perception, treatment control (5-25 IPQ):** 17.1 vs. 17.1 at baseline, 15.9 vs. 16.8 post-treatment (p=0.113)  **Illness perception, coherence (5-25 IPQ):** 14.3 vs. 13.7 at baseline, 11.7 vs. 12.7 post-treatment (p=0.024)  I**llness perception, emotional response (6-30 IPQ):** 16.9 vs. 17.5 at baseline, 15.5 vs. 16.4 post-treatment (p=0.425) | Not reported | The Netherlands  Organization for Health Research and Development grant | Fair |

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number**  **Randomized, Analyzed Attrition** | **Intervention** | **Study Participants** | **Duration of Pain (acute, subacute, chronic)** |
| **Behavioral therapy versus other intervention** |  |  |  |  |  |  |
| (no trials) |  |  |  |  |  |  |

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| **Author, Year** | **Duration of**  **Followup** | **Results** | **Adverse Events**  **Including Withdrawals** | **Funding Source** | **Quality**  **Rating** |
| **Behavioral therapy versus other intervention** |  |  |  |  |  |
| (no trials) |  |  |  |  |  |

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number**  **Randomized, Analyzed Attrition** | **Intervention** | **Study Participants** | **Duration of Pain (acute, subacute, chronic)** |
| **Comparisons of different behavioral therapies** |  |  |  |  |  |  |
| (no trials) |  |  |  |  |  |  |

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| **Author, Year** | **Duration of**  **Followup** | **Results** | **Adverse Events**  **Including Withdrawals** | **Funding Source** | **Quality**  **Rating** |
| **Comparisons of different behavioral therapies** |  |  |  |  |  |
| (no trials) |  |  |  |  |  |

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number**  **Randomized, Analyzed Attrition** | **Intervention** | **Study Participants** | **Duration of Pain (acute, subacute, chronic)** |
| **Behavioral therapy plus other intervention versus other intervention alone** |  |  |  |  |  |  |
| Khan, 2014 | Pakistan  Multicenter  Outpatient | Age 25-45 years;  chronic non- specific low back pain for 3 to 24 months' duration; MRI of lumbar spine to rule out underlying pathology; no  associated medical conditions. Exclusion: back pain less for less than 3 months in duration; history of back surgery; inflammatory arthritis; tumors; spinal or hip fractures; pregnancy; lumbar radiculopathy; severe cardiopulmonary disease affecting exercise tolerance. | Randomized: 54  Analyzed: 54  Attrition: 100% (54/54) | A: Behavioral therapy plus exercise  (n=27). Physical-therapist guided sessions 3 times per week for 12 weeks; patients instructed to continue exercises at home twice a day at least 5 times a week. Cognitive behavioral therapy aimed to guide patients to achieve their daily life goals, consisting of operant behavioral graded activity and problem solving training. Graded activity same as described for group B but patients were given instruction by the physical therapist to modify dysfunctional beliefs.  B: Exercise (n=27). Physical- therapist guided sessions 3 times per week for 12 weeks; patients instructed to continue exercises at home twice a day at least 5 times a week. Graded activity led by physical therapist who focused on gradual increase or pacing of activities important for individual patients with general exercises consisting of rolling, bridging, knee to chest, hamstring stretching (20 repetitions of each exercise) and cycling plus treadmill (10 minutes each) with resistance and speed adjusted to patient. | A vs. B  Mean age: 40 years (NR for A vs. B) Female: 54% (NR for A vs. B) Caucasian: NR  Baseline pain (0-10 VAS): 6.5 vs.  7.0 (mean) (p=0.1877)  Baseline function (0-24 RDQ):13.8 vs. 12.9 (mean) (p=0.1842)  Other characteristics: non reported | Eligibility: 3-24  months (chronic) Mean duration (A vs. B): NR |

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| **Author, Year** | **Duration of**  **Followup** | **Results** | **Adverse Events**  **Including Withdrawals** | **Funding Source** | **Quality**  **Rating** |
| **Behavioral therapy plus other intervention versus other intervention alone** |  |  |  |  |  |
| Khan, 2014 | Post-  treatment | A vs. B  **Pain** (mean 0-10 VAS): 6.5 vs. 7.0 at baseline; 2.7 vs. 5.3 post-treatment  (p<0.0001)  **Function** (mean 0-24 RDQ): 13.8 vs. 12.9 at baseline; 5.3 vs. 9.9 post- treatment (p<0.0001) | Not reported | Not reported | Fair |

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number**  **Randomized, Analyzed Attrition** | **Intervention** | **Study Participants** | **Duration of Pain (acute, subacute, chronic)** |
| Lamb, 2010  Lamb, 2012 | England  Multicenter General family practice | Age ≥18 years; low  back pain of at least moderate intensity for ≥ 6 weeks  Exclude: Physician's belief that the pain is caused by infection, fracture, malignancy or other potential serious cause; severe psychiatric or psychological disorder; previous participation n cognitive behavioral  intervention for low back pain. | Randomized:  701  Analyzed: 598 at  12 months (end of original study period according to published protocol); 395 at extended followup (mean  34 (20-50) months) Attrition: 85.3% (598/701) at 12 months (end of original study  period according to published protocol); 56.3% (395/701) at extended followup (mean  34 (20-50)  months) | A: Group cognitive behavioral  therapy plus active management advisory consult (n=468) (CBT: One individual assessment session (<90 minutes) plus six 90-minute group therapy sessions (duration of therapy not reported) that targeted  behaviors and beliefs about physical activity and avoidance of activity; primary care physicians told to avoid referrals during intervention but otherwise no attempt was made to control consultations in the followup period)  B: Active management advisory consult alone (n=233) (one 15 minute session of active management advice- info on remaining active, avoiding bed rest, use of pain medication, and symptom management- plus informational book) (patients free to seek further care on their own) | A vs. B  Mean age: 53 vs. 54 years Female: 59% vs. 61% Caucasian: 88% vs. 88% Baseline pain (0-100% modified  Van Korff pain): 59 vs. 59 (mean) Baseline function (0-24 RDQ): 9 vs.  9 (mean)  Function (0-100% Von Korff disability): 49 vs. 46  Other characteristics:  Severity of back pain "very or extremely troublesome": 54% vs.  56%  Severity of back pain "moderately troublesome": 46% vs. 44% Unable to work because of back pain: 11% vs. 9%  Back pain every day in last 6 weeks:  67% vs. 70%  Stiff or restricted movement: 67%  vs. 70%  Quality of life (-0.50-1.0 EQ-5D): not reported  Quality of life (0-100 SF-12 physical): 37 vs. 38 (mean)  Quality of life (0-100 SF-12 mental):  45 vs. 46 (mean)  Pain Self-efficacy (0-60 Pain Self  Efficacy): 40 vs. 41 (mean)  Fear avoidance beliefs (0-24 Fear avoidance beliefs questionnaire): 14 vs. 14 (mean) | Eligibility: subacute  to chronic: ≥ 6 weeks;  Mean duration (A vs. B): 13 vs. 13 years |

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| **Author, Year** | **Duration of**  **Followup** | **Results** | **Adverse Events**  **Including Withdrawals** | **Funding Source** | **Quality**  **Rating** |
| Lamb, 2010  Lamb, 2012 | 12 months  (protocol; Lamb  2010A)  >12 month extended followup (mean 34 (20-50) months) (Lamb  2012) | **A vs. B**  **Pain** (mean change from baseline, 0-100% Von Korff pain): 12.2 vs. 5.4 at 3 months (p<0.0001), 13.7 vs. 5.7 at 6 months (p<0.0001),13.4 vs. 6.4 at 12 months (p<0.0001), 17.4 vs. 12.8 at mean 34 (20-50) months (p=0.107) **Function** (mean change from baseline, 0-24 RDQ): 2.0 vs. 1.1 at 3 months (p=0.0021), 2.5 vs. 1.0 at 6 months (p=0.0002), 2.4 vs. 1.1 at 12 months (p=0.0008), 2.9 vs. 1.6 at mean 34 (20-50) months (p=0.013)  **Function** (mean change from baseline, 0-100% Von Korff disability): 13.2  vs. 8.9 at 3 months (p=0.0316), 13.9 vs. 5.7 at 6 months (p<0.0001),13.8 vs.  5.4 at 12 months (p<0.0001), 16.7 vs. 11.2 at mean 34 (20-50) months  (p=0.039)  **Quality of life** (mean change from baseline, -0.59 to 1 EQ-5D): -0.06 vs.  0.01 at 3 months (p=0.007), -0.05 vs. -0.03 at 6 months (p=0.382), -0.06 vs. -  0.0003 at 12 months (p=0.027), -0.07 vs. -0.04 at mean 34 (20-50) months  (p=0.387)  **Quality of life** (mean change from baseline, 0-100 SF-12 physical): -3.7 vs. -  1.5 at 3 months (p=0.0031), -3.6 vs. -1.8 at 6 months (p=0.0144), -4.9 vs. -  0.8 at 12 months (p<0.0001)  **Quality of life** (mean change from baseline 0-100 SF-12 mental): -1.3 vs. 0 at 3 months (p=0.1276), -2.5 vs. 0.09 at 6 months (p=0.0035), -0.9 vs. -0.7 at 12 months (p=0.8323)  **Pain self-efficacy** (mean change from baseline 0-60 Pain Self Efficacy): -  2.4 vs. 0.9 at 3 months (p<0.0001), -2.6 vs. 1.5 at 6 months (p<0.0001), -3.0 vs. 0.8 at 12 months (p<0.0001)  **Fear avoidance beliefs** (mean change from baseline 0-24 Fear Avoidance Beliefs Questionnaire): 3.4 vs. 0.7 at 3 months (p=0.0004), 3.0 vs. -0.1 at 6 months (p<0.0001), 3.4 vs. 0.5 at 12 months (p<0.0001)  **Treatment benefit** (% of patients who considered themselves recovered)**:**  59% (235/395) vs. 31% (62/197) at 12 months (p<0.0001)  **Treatment satisfaction** (% of patients satisfied with treatment): 65% (212/328) vs. 28% (43/151) at 12 months (p=0.463) | "There were no serious  events attributable to either treatment." | National Institute for  Health Research Health Technology Assessment Program | Fair |

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| **Author, Year** | **Country**  **Number of Centers and Setting** | **Inclusion Criteria** | **Number**  **Randomized, Analyzed Attrition** | **Intervention** | **Study Participants** | **Duration of Pain (acute, subacute, chronic)** |
| Vong, 2011 | China  Single center Physical therapy outpatient department | Age 18-65 years;  chronic low back pain of at least 3 months' duration. Exclusion: pregnancy; cardiac pacemaker; pain from neurologic disorders or rheumatologic disease; consistent symptoms of sciatica; spondylolisthesis more than 1 cm; received physical therapy for low  back pain in the past 3 months; psychiatric problems; received compensation for work-related disabilities | Randomized: 88  Analyzed: 76  Attrition: 86% (76/88) | A: Motivational enhancement  treatment plus physical therapy (n=45) (physical therapy: see group B for details) (motivational enhancement: motivational enhancement given during the physical therapy sessions to enhance motivation and make appropriate behavioral changes)  B: Physical therapy (n=43) (ten 30- minute sessions over 8 weeks, including 15 minutes of interferential (electrophysical) therapy and a tailor- made back exercise program; interferential therapy employed 4 interferential suction electrodes placed over the L2 to S1 paraspinal muscles on both sides of the back and a current of 80-100Hz was  used; physical therapy began with thorough assessment followed by a prescription of a specific set of exercises to include stretching/strengthening exercises for trunk and lower limbs; patients also requested to exercise at home every day) | NOTE- Demographics reported for  patients analyzed only  A vs. B  Mean age: 45 vs. 45 years Female: 58% vs. 68% Race: not reported  Baseline pain (0-10 VAS) (mean):  5.3 vs. 5.3  Baseline function (0-24 RDQ) (mean): 10.0 vs. 10.0  Other characteristics:  Previous physical therapy: 16% vs.  29%  Recurrent low back pain: 21% vs.  34%  Regular analgesia: 32% vs. 29% SF-  36 (0-100) physical function: 67 vs.  63  SF-36 (0-100) role-physical: 22 vs.  30  SF-36 (0-100) bodily pain: 41 vs. 49 (p=0.047)  SF-36 (0-100) general health: 41 vs.  49  p>0.05 between groups for all baseline characteristics unless noted | Eligibility: 3+  months (chronic) Mean duration (A vs. B): 41.6 vs.  51.0 months |

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| **Author, Year** | **Duration of**  **Followup** | **Results** | **Adverse Events**  **Including Withdrawals** | **Funding Source** | **Quality**  **Rating** |
| Vong, 2011 | 1 month  post- treatment | A vs. B  **Pain** (mean 0-10 VAS): 5.3 vs. 5.3 at baseline; 3.1 vs. 3.9 at 1 month  (p>0.05)  **Function** (mean 0-24 RDQ): 10.0 vs. 10.1 at baseline; 5.6 vs. 7.6 at 1 month (p>0.05)  **Quality of life** (mean 0-100 SF-36):  SF-36 (0-100) physical function: 67 vs. 63 (p>0.05) at baseline; p> 0.05 at 1 month (data not reported)  SF-36 (0-100) role-physical: 22 vs. 30 (p>0.05) at baseline; p> 0.05 at 1 month (data not reported)  SF-36 (0-100) bodily pain: 41 vs. 49 (p=0.047) at baseline; p> 0.05 at 1 month (data not reported)  SF-36 (0-100) general health: 41 vs. 49 (p>0.05) at baseline; p> 0.05 at 1 month (data not reported)  **Pain self-efficacy** (mean 0-60 PSEQ): 39.5 vs. 40.5 at baseline (p>0.05);  45.4 vs. 45.6 at 1 month (p>0.05) | Not reported | None stated (noted  that there was no commercial party funding or conflict of interest) | Fair |

**Please see Appendix C. Included Studies for full study references.**