

Evidence Profile

Authors & year	Design	Sample	Intervention (I) and Comparison (C)	Intervention delivery method, frequency, duration, (delivered to)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))	Participants randomised	
							I	C
COGNITIVE BEHAVIOURAL THERAPIES								
Andersson et al. (2012)	RCT	Swedish older adults experiencing chronic back or neck pain Mean age 72 (4.60) Male 24%	(I): Cognitive behavioural therapy (C): Waitlist	6 weekly 2hr sessions <i>(Group based)</i>	-Pain severity (MPI) -Disability (PAIRS) Anxiety and depression (HADS) -Quality of life (QOLI) -Pain intensity (VAS)	n/a	N=11	N=10
In comparison to a waitlist control group, cognitive behavioural therapy was not more effective in reducing pain severity, pain intensity, depression, anxiety or improving quality of life overtime. It was, however significantly more effective than the waitlist condition, in reducing the disability associated with pain.								
Buhrman et al. (2013a)	RCT with 6-month follow-up	Swedish adults with chronic pain who have previously undergone a multidisciplinary CBT-based rehabilitation program Mean age 40.10 (8.94) Male 28%	(I): Guided internet delivered cognitive behavioural therapy (iCBT) (C):Attention control (i.e., Moderated weekly online discussions)	8 weekly online modules <i>(Clinician guided individual)</i>	-Clinical overall improvement (CSQ) -Depression and anxiety symptoms (HADS) -Pain severity (MPI) -Quality of life (QOLI) -Disability (PAIRS)		N=36	N=36
Significant differences with small effect sizes ¹ were reported between the guided internet delivered CBT (iCBT) and the attention control group, with those that received the iCBT intervention reporting greater improvement at post-treatment on catastrophizing (d=0.16) and diverting attention (d =0.20) . These treatment effects were sustained at 6-month follow-up. Significant differences with small								

¹ Effect size is a quantitative measure that measures the magnitude of the difference between two groups with the proposed degree of difference corresponding to small (e.g. $d=0.3$), medium (e.g. $d=0.5$) or large (e.g. $d=0.8$) effect sizes.

What are effective psychological or multi-modal interventions for adults experiencing chronic pain?

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							I	C
<p>effect sizes were reported between the groups in favour of the iCBT for depression (d = 0.32), anxiety (d = 0.45) and disability (d=0.32) in favour of the iCBT, with improvements remaining at 6-month follow-up. There were no significant differences in pain severity or quality of life between the groups or over time.</p>								
Carmody et al. (2013)	RCT	<p>US older military veterans experiencing chronic pain</p> <p>Mean age (I): 66 (9), (C): 69 (10)</p> <p>Male (I) 96% and (C) 98%</p>	<p>(I): Telephone delivered Cognitive Behavioural therapy (T-CBT)</p> <p>(C): Telephone delivered pain education (T-EDU)</p>	<p>12 telephone sessions over 20 weeks</p> <p><i>(Individual)</i></p>	<p>-Mental and physical health (SF-12)</p> <p>-Depression (BDI)</p> <p>-Pain intensity (PI)</p>	n/a	N=50	N=51
<p>There were no statistically significant differences between the groups on any of the primary outcomes. There were, however statistically significant improvements over time for both groups in terms of physical health ($\beta=0.16$, 95% CI=0.03 to 0.29, p=0.01), mental health ($\beta= 0.05$, 95% CI=0.00 to 0.10, p=.04), depressive symptoms ($\beta=0.20$, 95% CI=-0.31 to -0.09, p=.0003) and pain intensity ($\beta=0.03$, 95% CI=-0.05 to -0.01, p =.0035).</p>								
Castel et al. (2012)	RCT with 3-month and 5-month follow-up	<p>Spanish adults with chronic pain related to fibromyalgia diagnosis</p> <p>Mean age 49.6 (6.8)</p> <p>Male 3%</p>	<p>(I1): Multicomponent cognitive behavioural therapy (CBT)</p> <p>(I2): Multicomponent cognitive behavioural therapy with hypnosis (CBT-H)</p> <p>(C): Standard</p>	<p>12 weekly 2hr sessions</p> <p><i>(Individual and Group based)</i></p>	<p>-Pain intensity (NRS)</p> <p>-Psychological distress (HADS)</p>	n/a	(I1) N=34 (I2) N=29	N=30

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							I	C
			pharmacological treatment (SPC)					
<p>At post-treatment those in the multicomponent cognitive behavioural therapy (CBT) were found to have significantly lower levels of pain intensity and psychological distress than those receiving standardised pharmacological treatment (SPC). Significant lower levels of pain intensity and psychological stress were also reported for those receiving multicomponent cognitive behavioural therapy with hypnosis (CBT-H). In addition, significantly lower levels of psychological distress were found for those receiving CBT-H compared to those receiving only CBT. Over time, significant reductions in psychological distress were found for those in both CBT and CBT-H, and the effects remained significant at both 3-month and 5-month follow-up. No significant reductions over time were identified for pain intensity.</p>								
Castro et al. (2012)	RCT	Brazilian adults with chronic musculoskeletal pain Mean age (I): 45.9 (8.1), (C): 48.7 (14.3) Male 11%	(I): Cognitive behavioural therapy (CBT) (C): Standard care	10 weekly 2hr sessions (Individual)	-Pain intensity (VAS) -Depression and anxiety symptoms (HADS) -Quality of life (SF-36)	n/a	N=48	N=47
<p>At post-treatment, 54% of participants in the CBT group compared to 28.9% of participants in the standard care group reported a significant reduction in pain intensity (RR=1.88; 95%CI 1.11-3.19). Significant reductions in depressive symptoms were reported by participants in the CBT group compared to standard care group, while there were no significant differences reported between the groups on symptoms of anxiety. Significant improvements on quality of life indices were reported by those who received CBT compared to standard care recipients on three of the eight quality of life subscales: physical limitations, general state of health and emotional limitations.</p>								
Dear et al. (2013)	RCT with 3-month follow-up	Australian adults experiencing chronic pain Mean age 49 (13) Male 14%	(I): Clinician guided Internet-delivered cognitive behaviour therapy (iCBT) (C): Waitlist	5 online lessons delivered over 8 weeks, including telephone and email contact with clinician on a weekly basis	-Disability (RMDQ) -Depression (PHQ-9) -Anxiety (GAD-7)	-Pain (WBPAQ)	N=31	N=31

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							I	C
				<i>(Individual and self-managed)</i>				
<p>Significant improvements were reported for the clinician guided internet-delivered CBT (iCBT) group compared to waitlist control group on disability, depression, anxiety and pain. These improvements corresponded to moderate to large effect sizes for levels of disability (d=0.88), depression (d =0 .66), and average pain (d=0.64), and a small effect size for anxiety (d=0 .38). These treatment effects were sustained at 3-month follow-up.</p>								
Dunne et al. (2012)	RCT with 6-month follow-up	Australian adults with Whiplash-associated disorders and MVA-related PTSD Mean age 32.54 (7.09) Male 50%	(I): Trauma-focused cognitive behavioural therapy (TF-CBT) (C): Waitlist	10 weekly 1 hr sessions <i>(Individual)</i>	- PTSD symptom severity (SCID) - Disability (NDI)	- PTSD self-reported symptom severity (PDS, IES-R) -Negative affect (DASS-42) - Quality of life (SF-36) - Pain intensity and negative affect (NRS)	N=13	N = 13
<p>At post-treatment significantly fewer participants in the trauma-focused cognitive behavioural therapy (TF-CBT) met criteria for a PTSD diagnosis compared to the waitlist control group ($\eta_p^2=0.57$). In addition greater reductions on disability were found for the TF-CBT group compared to the controls ($\eta_p^2=0.27$). Both these improvements were maintained at 6-month follow-up. There were no significant differences in pain intensity recorded between groups or over-time. At post-treatment significant reductions for the TF-CBT group compared to waitlist were recorded for self-reported PTSD, negative affect and four out of eight quality of life subscales (i.e., physical functioning, bodily pain, general health and social functioning and mental health). Each of these effects, except physical functioning, were maintained at 6-month follow-up.</p>								
Ferrando et al. (2012)	RCT with 9-month follow-up	Spanish adults with chronic pain related to temporomandibular disorders with muscular diagnosis	(I): Cognitive Behavioural Therapy plus hypnosis (CBT+H) (C): Standard therapy	Six 1hr sessions over 2.5 months <i>(Individual)</i>	-Pain frequency (non-standardized) -Pain intensity (PMQ) -Pain severity (MPI) -Emotional distress (BSI-18)	n/a	N=41	N=31

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							I	C
		Mean age (I): 39.57 (13.82), (C): 38.38 (16.57) Male (I) 13%, (C) 9%						
<p>Significant differences with small effects sizes were reported at post-treatment between the cognitive behavioural therapy plus hypnosis (CBT-H) group and standard therapy (ST), with those that received CBT-H intervention reporting greater improvements for pain frequency (effect size = 0.18), pain intensity (effect size = 0.18), pain severity (effect size = 0.15) and emotional distress (effect size = 0.15). The majority of participants in the CBT+H group reported significant clinical improvements in pain frequency (90%), pain intensity (77%) pain severity (83%) and emotional distress (69%). These improvements remained at 9-month follow-up.</p>								
Jensen et al. (2012)	RCT	Swedish adults with fibromyalgia related chronic pain Mean age 45.6 (6.4) Male 0%	(I): Cognitive behavioural therapy (CBT) (C): Waitlist	12 weekly 1.5hr sessions (Group based)	-Subjective impression of clinical improvement (PGIC)	-Depression (BDI) -Anxiety (STAI-S) -Pain intensity (VAS)	N=25	N=18
<p>At post-treatment significantly larger improvements were reported for the CBT group compared to waitlist for subjective impression of clinical improvement, depression [F(2, 32) = 8.6, P = 0.001] and anxiety symptoms [F(2, 52) = 3.31, P = 0.044]. There were no significant differences between the groups in pain intensity.</p>								
Kip et al. (2014)	RCT	US veterans with PTSD and chronic pain Mean age 41 (12.4) Male 80%	(I): Accelerated Resolution Therapy (ART)(exposure based therapy) (C): Attention control (AC) - (i.e., fitness assessment and planning)	2 to 5, 1h - 1.25hr sessions (Individual)	n/a	-Pain (POQ)	N=29	N=28

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<p>At post-treatment significantly larger treatment effects were reported for the Accelerated Resolution Therapy (ART) compared to attention control group for overall pain (effect size=1.04). In terms of the subscales of the pain measure those in the ART reported greater improvements for pain intensity (effect size=1.81), pain-related impairment in mobility (effect size=0.69) and negative affect (effect size =1.01).</p>								
Nicholas et al. (2013)	RCT with 1-month follow-up	Australian older adults experiencing chronic pain Mean age 73.9 (6.5) Male 37%	(I1): Self-managed pain program (PSM) based on CBT (I2): Exercise attention control (EAC) (C): Waitlist	8 twice-weekly 2hr sessions (Group based)	-Disability (RMDQ)	-Pain intensity and distress (0-10 numerical scale) -Depression (DASS-21)	(I1) N=49 (I2) N=53	N=39
<p>At post-treatment significant improvements were reported for the self-managed pain program (PSM) group compared to exercise attention control (EAC) group for measures of disability [d=0.47, 95% CI (0.04–0.89)], pain distress [d= 0.68, 95% CI (0.26–1.11)] and depression [d= 0.51, 95% CI (0.07–0.93)]. At 1-month follow-up, treatment effects were maintained for disability and pain distress. When PSM and EAC interventions were compared to the waitlist condition, similar treatment effects were identified for PSM group on disability [d= 0.76, 95% CI (1.2–0.3)] and pain distress [d=0.56, 95% CI (1.01–0.11)]. There were no significant differences between EAC and waitlist conditions on any of the outcomes. Clinical improvements in physical disability assessment at 1-month follow-up were achieved by 44% of the patients in the PSM group, 22% in the EAC and 20% in the waitlist group.</p>								
Nicholas et al. (2014)	RCT with 1, 6 and 12-month follow-up	Australian older adults experiencing chronic pain Mean age (I): 42.05 (12.33), (C): 43.22 (11.08) Male (I): 23%, (C): 26%	(I): CBT plus interoceptive exposure (CBT+IE) (C): CBT plus distraction/relaxation (CBT+D/R)	Daily 8hr sessions over 3 weeks (Group based)	-Pain intensity (MPI) -Depression (DASS-42) -Disability (MRDQ)	n/a	N=66	N=74
<p>At post-treatment significant improvements were found in both CBT plus interoceptive exposure (CBT+IE) and CBT plus distraction/relaxation (CBT+D/R) conditions for pain intensity (CBT+IE d=-0.50; CBT+D/R d=-0.54), depression (CBT+IE d=-0.50; CBT+D/R d=-0.42) and disability (CBT+IE d=-0.64; CBT+D/R d=-0.58). These treatment effects were sustained at the 1, 6 and 12-month follow-up.</p>								

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Otis et al. (2013)	RCT with 4-month follow-up.	US veterans with chronic neuropathic pain Mean age (I): 62.50 (10.98), (C): 63.38 (11.69) Male 100%	(I): Cognitive-behavioural therapy (CBT) (C): Treatment as usual (TAU)	11 weekly 1hr sessions <i>(Individual)</i>	-Pain severity (WHYMPI-PS) -Pain interference -Depression (BDI)	n/a	N=12	N=8
<p>Significant differences were reported between the groups with participants in the cognitive behavioural therapy (CBT) reporting significantly larger reductions on pain severity (B = -.54, 95% CI=-.09 to -.99) and pain interference (B = -.77, 95% CI=-.24 to -1.30) compared to participants in the treatment as usual (TAU) group. These treatment effects were sustained at 4-month follow-up. There were no significant differences in depressive symptoms between the groups or over time.</p>								

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Pigeon et al (2012)	RCT	US adults experiencing chronic pain and insomnia Mean age 50.7 (8.3) Male 33%	(I1): Cognitive behavioural therapy for pain (CBT-P) (I2): Cognitive behavioural therapy for insomnia (CBT-I) (I3): Cognitive behavioural therapy for combined pain and insomnia (CBT-P/I) (C): Waitlist	10 weekly sessions (Individual)	-Pain (MPI) -Depression (CES-D)	-Disability (PDI)	(I1) N=5 (I2) N=6 (I3) N=6	N=4
<p>Compared to the waitlist condition, cognitive behavioural therapy for pain (CBT-P) was not associated with significant improvement on any of the outcomes. Both cognitive behavioural therapy for insomnia (CBT-I) and cognitive behavioural therapy for pain and insomnia (CBT-I/P) however, were associated with reduced depression severity (CBT-I $g=1.64$; CBT-P/I $g=2.99$) when compared to the waitlist condition. There were no significant differences in pain or disability between the groups. All groups experienced moderate to large improvements in pain over time (CBT-P $g=1.21$; CBT-I $g=0.83$; CBT-I/P $g=0.49$), although these were not significantly different compared to waitlist control ($g=0.44$).</p>								
Siemonsma et al. (2013)	RCT	Dutch adults experiencing chronic lower back pain Mean age (I): 45.6 (12.9), (C): 47.1 (11.1) Male (I) 46%, (C) 40%	(I): Cognitive treatment of illness perception (C): Waitlist	10-14 weekly 1hr sessions (Individual)	n/a	-Physical disability (QBPDs) -Patient relevant physical activities (PSC)	N=104	N=52

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							I	C
<p>At post-treatment, there were no statistically significant differences between those who received cognitive treatment of illness perception and those on the waitlist in terms of physical disability. However, significant differences were found between the groups in favour of the cognitive treatment of illness perception on measure of patient relevant physical activity.</p>								
Sleptsova et al (2013)	RCT with 12-month follow-up	Turkish adult immigrants with chronic low back pain Mean age (I): 44 (7.4), (C): 43.8 (7.1) Male (I) 30%, (C) 32%	(I): Culturally sensitive cognitive behavioural therapy (Cs-CBT) (C): Culturally sensitive exercise therapy (Cs-ET)	Twenty five 1.5hr sessions over 6 months (Group based)	-Physical functioning (SF-36) -Mental functioning (SF-36) -Anxiety and depression (GHQ) -Disability (PDI) -Pain intensity (VAS)	n/a	N=62	N=54
<p>There were no significant differences identified between the groups for physical or mental functioning, anxiety, depression, disability or pain intensity at post-treatment or at 12-month follow-up.</p>								
Tang et al. (2012)	RCT with 1-month and 6-month follow-up	UK adults with chronic non-malignant pain and clinical insomnia Mean age (I): 45.7 (9.3), (C): 51.3 (7.9) Male 10%	(I): Hybrid cognitive behavioural therapy (H-CBT) for insomnia and pain (C): Monitoring group	4 weekly 2hr sessions (Individual)	n/a	-Pain intensity (BPI) -Pain interference (BPI) -Anxiety (HADS-A) -Depression (HADS-D)	N=12	N=12
<p>Significant differences were reported between the hybrid cognitive behavioural therapy for insomnia and pain (H-CBT) and the monitoring control group, with those that received H-CBT intervention reporting greater improvements at post-treatment on pain interference (d=1.92) anxiety (d=1.44) and depression (d=0.94). These treatment effects were sustained at 1-month and 6-month follow-up. There were no significant differences in pain intensity between the groups.</p>								
Zonneveld et al. (2012)	RCT	Dutch adults with undifferentiated somatoform disorder	(I): Cognitive behavioural therapy (CBT)	13 weekly 2hr sessions	-Physical functioning (SF-36) -Mental functioning	-Quality of life (SF-36) -Depression, anxiety (SCL-90-R)	N=84	N=78

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							I	C
		or a chronic pain disorder Mean age (I): 46 (38-53), (C): 44 (35-52) Male (I): 20%, (C): 18%	(C): Waitlist	(Group based)	(SF-36)			
<p>Significant differences were reported between the cognitive behavioural therapy (CBT) and the waitlist condition, with those that received the CBT intervention reporting greater improvements at post-treatment for physical functioning ($d = 0.38$). There were no significant differences in mental functioning between the groups or overtime. On the secondary outcome measures, significant differences were found between the groups in favour of the CBT intervention on four out of eight quality of life subscales including role functioning physical ($d=0.43$), bodily pain ($d=0.51$), social functioning, ($d=0.36$) and role functioning emotional ($d=0.44$). There were no significant differences in depression or anxiety symptoms between the groups, or over time.</p>								
MULTIDISCIPLINARY PAIN MANAGEMENT PROGRAMS (MPMPs)								
Abbasi et al. (2012)	RCT	Iranian adults with chronic low back pain Mean age 45 (10) Males 14%	(I1): Spouse assisted - multidisciplinary pain management programme (SA-MPMP) (I2): Patient-oriented multidisciplinary pain management programme (P-MPMP) (C): Standard medical care (SMC)	7 weekly 2hr sessions (Group based)	-Disability (RDQ) -Pain severity (VAS)	n/a	(I1) N=10 (I2) N=12	N=11
<p>At post-treatment, there were no significant differences in disability or pain severity between the groups. However, significant small to moderate improvements were noted across all groups on disability (SA-MPMP $\eta^2=0.48$; P-MPMP $\eta^2=0.33$; SMC $\eta^2=0.43$) and for both intervention on pain severity [SA-MPMP $\eta^2= 0.43$; P-MPMP $\eta^2=0.27$].</p>								

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Angeles et al. (2013)	RCT with 6-month follow-up	Canadian adults with chronic musculoskeletal or neuropathic pain Age range 40-59 years Male 37%	(I): Early pain management intervention (EI) (C): Delayed Intervention (DI)	8 weekly 2hr sessions <i>(Group based)</i>	-Quality of life – physical and social/emotional functioning - (SF-36)	n/a	N=31	N=32
<p>There were no significant differences between groups in terms of quality of life total score. When quality of life subscales were examined separately, there was a significant difference between the groups for two out of 10 quality of life subscales in favour of the early intervention in role physical (EI: mean change = -15.3; DI: mean change = + 3.4) and bodily pain (EI: mean change=9.2; DI: mean change = -3.9) domains. These treatment effects were maintained at 6-month follow-up.</p>								
Fersum et al. (2013)	RCT with 3-month and 12-month follow-up	Norwegian adults with chronic lower back pain Mean age 42.9 (12.5) Male 51%	(I): Classification based cognitive functional therapy (CB-CFT) (C): Traditional manual therapy and exercise	12 weekly 30-45 min sessions <i>(individual)</i>	-Disability (ODI) -Pain intensity (PIRNS) -Anxiety and depression (HSCL-25)	n/a	N=62	N=59
<p>Significantly larger improvements were reported at post treatment for the classification based cognitive functioning therapy (CB-CFT) compared to the traditional manual therapy and exercise control group on disability [mean difference -9.7; 95% CI -12.7 to -6.7], pain intensity [mean difference -2.1; 95% CI -2.7 to -1.4] and anxiety and depression symptoms [mean difference -0.12; 95% CI -0.19 to -0.04]. These treatment effects were maintained at both 3-month and 12-month follow-up.</p>								
Makino et al. (2014)	RCT	Japanese adults experiencing craniocervical chronic pain	(I1): Exercise therapy plus psychological intervention (ET+PI) (I2): Exercise therapy	One session on psycho-education and jaw muscle relaxation	Pain intensity: (NRS)	n/a	(I1) N=13 (I2) N=13	N=13

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		Mean age (I): 53 (27-75), (I): 42 (32-73), (C): 40 (17-66) Male (I) 15%, (I) 46%, (C) 31%	(ET) (C): Pharmacological treatment					
<p>At post-treatment, there were no significant differences in pain intensity between the groups or over time. At follow-up, there was a significant improvement over time in pain intensity found at T4 (day 70) and T5 (day 98) for exercise therapy plus psychological intervention (ET+PI). There was no improvement noted for the exercise therapy alone or pharmacological control group over time. In addition, at T5 (day 98) there was a significant difference between the groups with participants in the ET+PI intervention reporting significantly lower levels of pain intensity than the other two groups.</p>								
Tse et al. (2013)	RCT	Chinese older adults with chronic musculoskeletal pain Mean age 76.5 (5.9) Male 6%	(I): Motivational interviewing and physical exercise program (MI+PE) (C): Treatment as usual (TAU)	8 weekly 1.5hr sessions <i>(Group based)</i>	-Pain intensity (NRS) -Anxiety (STAI) -Depression (GDS-SF) -Functioning (SF-12)	n/a	N=31	N=25
<p>At post-treatment participants in the motivational interviewing and physical exercise program (MI+PE) reported a significant reduction in pain intensity [-1.18, 95% CI (-1.92, -0.45)] and state anxiety [-18.11, 95% CI (-30.72, 5.5)]. There were no significant reductions reported by the treatment as usual (TAU) control group on any of the outcome measures. Comparing the two groups at post-treatment, participants in the MI+PE intervention reported significantly lower pain intensity, depression and anxiety state levels than those in the TAU group.</p>								
MINDFULNESS-BASED INTERVENTIONS								
Brown and Jones (2013)	RCT	UK adults with chronic musculoskeletal pain Mean age (I) 48 (10), (C): 45 (12) Male 33%	(I): Mindfulness-based pain management program (MBPMP) (C): Treatment as usual (TAU)	8 weekly 2.5hr sessions <i>(Individual)</i>	-Mental and physical health (SF-36) -Pain intensity (sensory/affective pain) (MPQ)	n/a	N=15 at completion (pre-treatment N not provided)	N=13 at completion (pre-treatment N not provided)

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<p>Those in the mindfulness based pain management program group reported significantly greater improvements in mental health compared to TAU. There were no significant differences reported for physical health between the groups or over time. There was no significant difference between the groups in terms of pain. There was however, a significant difference over time for affective pain in favour of the mindfulness based pain management program group.</p>								
Buhrman et al. (2013b)	RCT with 6-month follow-up	Swedish adults experiencing chronic pain Mean age 49.1 (10.3) Male 41%	(I): Internet delivered acceptance and commitment therapy (I-ACT) (C): Attention placebo (online discussion forum)	7 weekly online modules <i>(Clinician guided, individual)</i>	n/a	-Depression and anxiety symptoms (HADS) -Pain severity (MPI) -Quality of life (QOLI) -Disability (PAIRS)	N=38	N=38
<p>At post-treatment, significant differences were reported between the groups in favour of the internet ACT intervention for depression ($d = 0.18$) and anxiety ($d = 0.44$) symptoms. These treatment effects were sustained at 6-month follow-up. There were no significant differences in pain severity, quality of life or disability between the groups or over time.</p>								
Garland et al. (2014)	RCT with 3-month follow-up	US adults with chronic pain and prescription opioid misuse Mean age 48 (14) Male 32%	(I): Mindfulness Oriented Recovery Enhancement (MORE) (C): Attention placebo (i.e., Support group)	8 weekly sessions <i>(Group based)</i>	-Pain severity (BPI) -Functional interference (BPI)	n/a	N=57	N=58
<p>At post-treatment, significant differences were reported between the groups in favour of the mindfulness oriented recovery enhancement (MORE) intervention for pain severity ($d = 0.50$) and functional interference ($d = 0.78$). These treatment effects were maintained at 3-month follow-up.</p>								
Kristjánsdóttir et al. (2013)	RCT with 5-month follow-up	Norwegian adults with fibromyalgia related chronic pain	(I): ACT based smart phone intervention with diaries and therapist feedback	4 weeks <i>smartphone delivered intervention</i>	n/a	-Pain intensity (VAS) - Emotional functioning (SF-8) -Physical functioning (SF-	N=70	N=70

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							I	C
		Mean age :(I) 44.59 (11.13), (C) 43.80 (11.20) Male 0%	(C): Attention placebo (i.e., Informational Website with self-help pain management material)	<i>(Individual, group based and self-managed)</i>		8) -Emotional distress (GHQ)		
At post-treatment, significant group differences were reported between the groups in favour of the ACT intervention for emotional functioning (d = 0.63). However, this effect was not sustained at 5-month follow-up. There were no significant group differences reported on pain intensity, physical functioning or emotional distress at post-treatment or 5-month follow-up.								
McCracken et al. (2013)	RCT with 3-month follow-up	UK adults experiencing chronic pain Mean age 58 (12.8) Male 31%	(I): Acceptance and commitment therapy (ACT) plus TAU (C): Treatment as usual (TAU)	Four 4hr sessions over 2 weeks <i>(Group based)</i>	-Disability (RMDQ) -Depression (PHQ) -Physical functioning (SF-36) -Pain intensity (0-10 rating)	-Emotional functioning (SF-36) -Subjective improvement (PGIC)	N=37	N=36
At post-treatment, significant differences were found between the groups in favour of ACT for depression (effect size=0.46) and overall improvement. At 3-month follow-up those in ACT demonstrated lower disability (d=0.58), less depression (d=0.59) and significantly higher pain acceptance (d=0.64) in comparison to those in TAU.								
Trompetter et al. (2014)	RCT with 6-month follow-up	Dutch adults experiencing chronic pain Mean age (I): 52.9 (13.3), (I): 52.3 (11.8), (C) 53.2 (12)	(I1): Internet-based clinician guided self-help intervention based on ACT (I2): Internet-based expressive writing	Nine online modules over 9-12 weeks duration (Individual and self-guided)	-Pain interference (MPI)	-Depression and anxiety (HADS) -Pain intensity (NRS) -Pain disability (PDI) -Positive mental health (MHC-SF)	(I1) N=82 (I2) N=79	N=77

What are effective psychological or multi-modal interventions for adults experiencing chronic pain?

Authors & year	Design	Sample	Intervention (I) and Comparison (C)	Intervention delivery method, frequency, duration, (delivered to)	Primary Outcome domain (Measure(s))	Secondary Outcome domain (Measure(s))	Participants randomised	
							I	C
		Male (I) 23%, (I) 24%, (C) 25%	(C): Waitlist					
<p>At post-treatment significant differences were reported between the groups in favour of ACT based internet self-help intervention compared to internet-based expressive writing therapy for pain interference (d= 0.33) and pain intensity (d=0.23). These effects were sustained at 6 month follow-up. No significant improvement was present for ACT compared to waitlist condition. However there were no differences between the groups at post-treatment when ACT was compared to the internet-based expressive writing or waitlist condition for depression, anxiety, pain disability or positive mental health outcomes.</p>								
Wicksell et al. (2013)	RCT	Swedish adults with fibromyalgia related chronic pain Mean age 45.1 (6.6) Male 0%	(I): Acceptance and Commitment Therapy (ACT) (C): Waitlist	12 weekly 1.5hr sessions (Group based)	-Pain related disability (PDI)	-Quality of life (mental and physical functioning)(SF-36) -Depression (BDI) -Anxiety (STAI) -Pain intensity	N=23	N=17
<p>Significant differences with moderate to large effect sizes were reported for those in the Acceptance and Commitment Therapy (ACT) condition compared to waitlist for pain related disability (d=0.75), mental functioning (d=0.84), depression (d=0.44), state anxiety (d=0.51) and trait anxiety (d=0.73). There were no significant differences in physical functioning or pain intensity between the groups.</p>								
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Tobbackx et al. (2013)	RCT	Belgian adults with whiplash associated chronic pain Mean age 41 (10) Male 28%	(I): Muscle relaxation (C): Acupuncture	One 20 minutes session (Individual)	Pain sensitivity	-Neck disability (NDI) -Neck pain (VAS)	N=39	N=39
<p>Those in the acupuncture therapy reported significantly greater improvements over time in pain sensitivity compared to muscle relaxation group. There were no significant differences between the muscle relaxation group and acupuncture for neck disability or pain severity.</p>								