National Institute for Health and Care Excellence

Draft for consultation

Rehabilitation for chronic neurological disorders including acquired brain injury

[H] Evidence review for emotional health and mental wellbeing

NICE guideline <number>

Evidence reviews underpinning recommendations 1.3.2, 1.3.3, 1.14.3, 1.18.1 to 1.20.7 and research recommendations in the NICE guideline

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This evidence review was developed by NICE

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Emotional health and mental wellbeing

Review question

What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Introduction

Emotional health and wellbeing may be adversely affected by a person developing a chronic neurological disorder (CND). This could be a direct consequence of the disorder affecting for instance, brain function resulting in changes in mood, anxiety, personality or perception. It could also reflect a reaction to, or difficulty adapting to, living with a disability, developmental changes during childhood, or alterations in family dynamics. Less commonly, the CND may be a consequence of emotional factors, such as spinal cord injury after self-induced trauma.

This review aims to explore whether improving emotional health and wellbeing supports rehabilitation by improving a person's ability to engage in rehabilitation, thereby improving their motivation, their functioning and their relationships with family and more widely.

Summary of the protocol

See **Error! Reference source not found.** for a summary of the Population, Intervention, Comparison and Outcome (PICO) characteristics of this review.

Table 1: Summary of the protocol (PICO table)

Population	Adults and children with rehabilitation needs due to the following chronic neurological disorders: ○ Acquired brain injury ○ Acquired spinal cord injury ○ Acquired peripheral nerve disorders ○ Progressive neurological diseases ○ Functional neurological disorders
Intervention	• Interventions for adjustment and engagement • Interventions to improve relationships • Interventions to improve motivation • Interventions for adaptive dysfunction and behaviours that challenge others • Creative therapies
Comparison	• Interventions compared with others in the same group or: • Placebo (placebo or sham) • Control (no intervention, waitlist, standard rehabilitation care alone, or 'usual care') • The same intervention (as listed under 'intervention') but varied in terms of: ○ Frequency ○ Intensity ○ Timing ○ Setting
Outcomes	• Physical and mental health related quality of life and social care related quality of life (assessed using validated, global scales, such as the EQ5D -

	3L, EQ5D - 5L, Multiple Sclerosis Impact Scale [MSIS-29 v2], NeuroQOL, Quality of Life in Brain Injury [QOLIBRI], PedsQL, SF-36, WHOQOL-100, WHO-QOL-BREF, ASCOT, Warwick Edinburgh Mental Well-Being Scale, Satisfaction with Life Scale [SWLS], and ICECAP-A) • Mood (assessed using standardised, validated measures of anxiety and depression such as HADS, PHQ-9, Beck's Depression/Anxiety Inventory (BD/AI), DAS, CES-D, State-Trait Anxiety Inventory [STAI], Children's Depression Inventory (CDI), Children's Depression Rating Scale [CDRS] and the Geriatric Depression Scale [GDS]) • Pain (measured using validated tools such as the Visual Analogue Scale [VAS], Brief Pain Inventory [BPI] and the Numerical Pain Rating Scale [NPRS]) • Coping and adjustment (assessed using a standardised, validated measure of coping and adjustment such as Stroke Self Efficacy Scale, MS Self Efficacy Scale, Perceived Stress Scale, General Self-Efficacy Scale) • Behaviour change (measured using a standardised, validated, global measure of behavioural change such as St Andrews Swansea Neurobehavioral Outcome Scale [SASNOS], and the Neurobehavioral Functioning Inventory [NFR]) • Return to work, education, or training (assessed objectively by a count of return to work, education, training or 'meaningful activity') • Carer quality of life (using a validated, global measure such as the Adult Social Care Outcomes toolkit for Carers [ASCOT – Carers], the Carer Experience Scale [CES] and Adult Carers Quality of Life [AC QoL]; Caregiver Burden Scale/ Carer Strain Index; PedsQL-fim, Bakas Caregiving Outcome Scale)

ASCOT: adult social care outcomes toolkit; CES-D: Center of Epidemiological Studies-depression; DAS: depression, anxiety and stress scale; EQ 3D: EuroQoL three dimensions; EQ 5D: EuroQoL five dimensions; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; ICECAP-A: ICEpop CAPability measure for adults; MS: multiple sclerosis; NeuroQOL: quality of life in neurological disorders; PedsQL: paediatric quality of life inventory - family impact module; PHQ-9: patient health questionnaire; SCI: spinal cord injury; SF-36: 36-Item short form survey; v: version; WHOQOL-BREF: World Health Organisation quality of life brief format; WHOQOL-100: World Health Organisation quality of life 100 questions

For further details see the review protocol in appendix A.

Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual. Methods specific to this review question are described in the review protocol in appendix A and the methods document (Supplement 1: methods).

Declarations of interest were recorded according to NICE's conflicts of interest policy.

Effectiveness evidence

Included studies

Twenty four studies were included in this review: 21 randomised controlled trials (RCTs) Andrewes 2014; Baker 2019; Bogosian 2015; Bogosian 2022; Brown 2014; Cavalera 2019; Giovannetti 2020; Goldstein 2021; Graziano 2014; Impellizzeri 2020; Kraepelien 2020; Morrow 2021; Moss-Morris 2013; Murdoch 2020; Okai 2013; Pohl 2013; Ponsford 2022;

Potter 2016; Sesel 2022; Simpson 2017; Tornas 2016); 2 cluster RCTs (Nathan 2017; Navarta-Sanchez 2020); 1 cross-over RCT (Siponkoski 2022).

The included studies are summarised in **Error! Reference source not found.**.

Eight studies were conducted in the UK (Andrewes 2014; Bogosian 2015; Bogosian 2022; Goldstein 2021; Moss-Morris 2013; Okai 2013; Potter 2016; Simpson 2017); 4 studies were conducted in Australia (Baker 2019; Brown 2014; Ponsford 2022; Sesel 2022); 4 studies were conducted in Italy (Cavalera 2019; Giovannetti 2020; Graziano 2014; Impellizzeri 2020); 3 studies were conducted in Canada (Morrow 2021; Nathan 2017; Murdoch 2020); 2 studies were conducted in Sweden (Kraepelien 2020; Pohl 2013); 1 study in Finland (Siponkoski 2022); 1 study in Norway (Tornas 2016); and 1 study in Spain (Navarta-Sanchez 2020).

Fifteen studies investigated interventions for adjustment and engagement; 12 of these were conducted in people with progressive neurological disorders (Bogosian 2015; Bogosian 2022; Cavalera 2019; Giovannetti 2020; Graziano 2014; Kraepelien 2020; Morrow 2021; Moss-Morris 2013; Murdoch 2020; Navarta-Sanchez 2020; Sesel 2022; Simpson 2017),1 study was conducted in people with acquired brain injury (Potter 2016); 1 study was conducted in people with acquired peripheral nerve disorders (Nathan 2017), and 1 study was conducted in people with functional neurological disorders (Goldstein 2021).

One study investigated interventions to improve relationships in people with acquired brain injury (Brown 2014).

One study investigated interventions to improve motivation in acquired brain injury (Tornas 2016).

Two studies investigated interventions for adaptive dysfunction and behaviours that challenge others; 1 study was conducted in people with acquired brain injury (Ponsford 2022) and 1 study was conducted in people with progressive neurological disorders (Okai 2013).

Four studies investigated creative therapies; 1 study was conducted in people with acquired brain injury (Siponkoski 2022); 1 study with a mixed population was conducted in people with acquired brain injury or acquired spinal cord injury (Baker 2019); and 2 studies were conducted in people with progressive neurological disorders (Impellizzeri 2020; Pohl 2013).

There were no trials reporting data for interventions to support adjustment and engagement, interventions to improve motivation, interventions for adaptive dysfunction and behaviours that challenge others, or creative therapies for children and young people with chronic neurological disorder.

Data for the following outcomes were identified through analysis of the the included studies:

- Physical and mental health related quality of life and social care related quality of life
- Mood
- Pain
- Coping and adjustment
- Behaviour change
- Carer quality of life

See the literature search strategy in appendix B and study selection flow chart in appendix C.

Excluded studies

Studies not included in this review are listed, and reasons for their exclusion are provided in appendix J.

Summary of studies included in the evidence review

Summaries of the studies that were included in this review are presented in **Error! Reference source not found.**.

Table 2: Summary of included studies.

Study	Population	Intervention	Comparison	Outcomes
Andrewes 2014 RCT Scotland, UK	N=10 adults with traumatic brain injury and history of substance misuse • Positive psychology intervention: n=5 • Treatment as usual: n=5 Age in years [Mean (SD)]: • Positive psychology intervention: 38.3 (5.9) • Treatment as usual: 46.0 (11.1) Sex (M/F): • Positive psychology intervention: n=5/n=0 • Treatment as usual: n=4/n=1 Chronic neurological disorder category: acquired brain injury	Positive psychology intervention Intervention 1. "Three good things in life" - Participants were given instructions to write three positive events that occurred each day. A half-hour period was also allocated in the group participants' timetable to write in their journal at the end of each day. Intervention 2. "Signature strengths" - Participants completed the Brief Strengths Test, which allowed them to identify their five key strengths and the values aligned with those strengths. Daily tasks set out, however no detail on number of sessions with practitioners over 12 weeks. Protocol intervention group: Interventions for adaptive dysfunction and behaviours that challenge others	Treatment as usual Participants continued to receive any concomitant care they were already receiving, with no additional treatment. All participants in the intervention and control group were concurrently receiving weekly individual therapy sessions, which included cognitive behavioural therapy and motivational interviewing for substance misuse.	• Mood
Baker 2019	N=47 adults with spinal cord injury or traumatic brain injury	Songwriting	Standard care	• Physical and mental health related

Study	Population	Intervention	Comparison	Outcomes
RCT Australia	• Songwriting: n=31 • Standard care: n=16 Age in years [Mean (SD)]: • Songwriting: 49.6 (18.5) • Standard care: 44.7 (17.5) Sex (M/F): • Songwriting: n=17/n=14 • Standard care: n=8/n=7 Chronic neurological disorder category: acquired spinal cord injury or acquired brain injury	2x60-minute sessions per week (rehabilitation site or home) over 6 weeks The intervention drew on self-concept. There were opportunities to challenge negative thinking and reinforce positive thinking but also ensure all domains of the self were discussed. Self-perceptions and their personal stories were then transformed into lyrics and music with the support of the music therapist. Protocol intervention group: Creative Therapy	Continued to receive any concomitant care they were already receiving, with no additional treatment.	quality of life and social care related quality of life • Mood • Coping and adjustment
Bogosian 2015 RCT UK	N=40 adults with multiple sclerosis • Mindfulness: n=19 • Waitlist control: n=21 Age in years [Mean (SD)]: • Mindfulness: 53.42 (8.3) • Waitlist control: 50.9 (9.9) Sex (M/F): • Mindfulness: n=10/n=9 • Waitlist control: n=8/n=13 Chronic neurological disorder category: progressive	Online Mindfulness Group Skype videoconferences (5 participants per group) 8x1-hour sessions over 8 weeks Mindfulness-based stress reduction (MBSR) syllabus with additional cognitive therapy exercises. Protocol intervention group: Interventions for adjustment and engagement	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood

Study	Population	Intervention	Comparison	Outcomes
	neurological diseases			
Bogosian 2022 RCT UK	N=60 adults Parkinson's disease • Mindfulness: n=30 • Waitlist control: n=30 Age in years [Mean (SD)]: • Mindfulness: 59.50 (11.12) • Waitlist control: 62.23 (8.96) Sex (M/F): • Mindfulness: n=17/n=13 • Waitlist control: n=13/n=17 Chronic neurological disorder category: progressive neurological diseases	Online Mindfulness Group Skype videoconferences (5 participants per group) 8x1-hour sessions over 8 weeks Mindfulness-based stress reduction (MBSR) syllabus with additional cognitive therapy exercises. Protocol intervention group: Interventions for adjustment and engagement	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Mood • Pain
Brown 2014 RCT Australia	N=59 families of children with acquired brain injury • Stepping Stones Triple P plus Acceptance and Commitment Therapy (SSTP + ACT): n=30 • Care as usual: n=29 Age in years of children [Mean (SD)]: • SSTP + ACT: 7.13 (3.17) • Care as usual: 6.87 (3.03)	SSTP + ACT 2-sessions ACT and 9-sessions SSTP. 8xgroup sessions (16 hours; 2 ACT sessions, 6 SSTP sessions) and 3xindividual SSTP telephone sessions (1.5 hours). Protocol intervention group: Interventions to improve relationships	Care as usual Continued to receive any concomitant care they were already receiving, with no additional treatment. Families allocated to the care as usual condition received the intervention at the end of the treatment period.	• Behaviour change

Study	Population	Intervention	Comparison	Outcomes
	Sex (M/F): • SSTP + ACT: n=17/n=13 • Care as usual: n=8/n=11 Chronic neurological disorder category: acquired brain injury			
Cavalera 2019 RCT Italy	N=121 adults with multiple sclerosis • Mindfulness: n=54 • Psychoeducation: n=67 Age in years [Mean (SD)]: • Mindfulness: 42.26 (8.35) • Psychoeducation: 43.19 (9.02) Sex (M/F): • Mindfulness: n=18/n=36 • Psychoeducation: n=25/n=42 Chronic neurological disorder category: progressive neurological diseases	Online mindfulness meditation Weekly online and skype videochat over 8 weeks. The course followed the original MBSR structure, incorporating limited changes to fit the online context and to accommodate MS clinical features. For example, music meditations and discussions about symptoms acceptance were introduced. Protocol intervention group: Interventions for adjustment and engagement	Online psychoeducation Weekly sessions with videos and home exercises over 8 weeks Content dealt with stress management, relaxation training, sleep hygiene, fatigue, and social relationships. The requested time commitment was estimated to be similar to the online MBSR course.	• Physical and mental health related quality of life and social care related quality of life • Mood
Giovannetti 2020 RCT Italy	N=37 adults with multiple sclerosis • Resilience group training (READY): n=18 • Relaxation: n=19 Age in years [Mean (SD)]: • READY: 44.8 (10.1)	READY Group sessions - 7x2.5 hour weekly sessions + 1x2.5 hour "booster" session 5 weeks after the 7th session over 12 weeks An introductory module (Introduction to the READY Resilience Model), five modules focusing on each of	Relaxation The control condition consisted of a group relaxation program based on autogenic training. This control program matched the study intervention in number of sessions and schedule (but not in session	• Physical and mental health related quality of life and social care related quality of life • Mood • Coping and adjustment

Study	Population	Intervention	Comparison	Outcomes
	• Relaxation: 46.53 (8.3) Sex (M/F): • READY: n=5/n=13 • Relaxation: n=10/n=9 Chronic neurological disorder category: progressive neurological diseases	the 6 ACT processes (Mindfulness, Acceptance, Cognitive Defusion, Self-as-Context, Values and Meaningful Action), and a review module (Review and Future Planning). The booster session provides a review of the program content. Protocol intervention group: Interventions for adjustment and engagement	content and length) to control for the non-specific effects of READY.	
Goldstein 2021 RCT UK	N=368 adults with dissociative non-epileptic seizures • CBT + standard care: n=186 • Standard care: n=182 Age in years [Mean (SD)]: • CBT + standard care: 37.7 (14.5) • Standard care: 37.3 (14.2) Sex (M/F): • CBT + standard care: n=46/n=140 • Standard care: n=56/n=126 Chronic neurological disorder category: functional neurological disorders	CBT + standard care 12xsessions plus 1 "booster" session Delivered over 4-5 months with the "booster" session at 9 months post-randomisation. CBT model incorporated the fear escape–avoidance model. Protocol intervention group: Interventions for adjustment and engagement	Standard care Included providing briefing sessions to the clinicians, a detailed leaflet about how they might explain the diagnosis to patients, crib sheets containing the essential information that they should provide to patients during sessions and sets of frequently asked questions for clinicians providing standard care. Important component was the provision of information.	• Physical and mental health related quality of life and social care related quality of life • Mood
Graziano 2014 RCT Italy	N=144 adults with multiple sclerosis • CBT: n=71 • Informative sessions: n=73	Group-based CBT 4x2-hour in-person group sessions over 2 months and fifth	Informative sessions 3xgroup informative sessions over 6 months	• Physical and mental health related quality of life and

Study	Population	Intervention	Comparison	Outcomes
	Age in years [Mean (SD)]: • CBT: 42.3 (8.5) • Informative sessions: 38.3 (10.1) Sex (M/F): • CBT: n=14/n=17 • Informative sessions: n=17/n=24 Chronic neurological disorder category: progressive neurological diseases	follow-up session after 6 months. Protocol intervention group: Interventions for adjustment and engagement	Informative sessions about stem cells, complementary and alternative therapies, and nourishment, respectively.	social care related quality of life • Mood
Impellizzeri 2020 RCT Italy	N=30 adults with multiple sclerosis • Neurologic Music Therapy (NMT) + Conventional Cognitive Rehabilitation (CCR): n=15 • Conventional Cognitive Rehabilitation (CCR): n=15 Age in years [Mean (SD)]: • NMT + CCR: 51.73 (10.15) • CCR: 51.33 (7.61) Sex (M/F): • NMT + CCR: n=9/n=6 • CCR: n=10/n=5 Chronic neurological disorder category:	NMT + CCR 3x1-hour CCR sessions a week (total 24 sessions) + 3xNMT sessions week (total 24 sessions) over 8 weeks 2 NMT techniques: the Associative Mood and Memory Training and the Music in Psychosocial Training and Counselling. Protocol intervention group: Creative Therapies	CCR 6x1-hour CCR sessions a week over 8 weeks	• Mood

Study	Population	Intervention	Comparison	Outcomes
	progressive neurological diseases			
Kraepelien 2020 RCT Sweden	N=77 adults with Parkinson's disease • Individually Tailored Internet-Based Cognitive-Behavioural Therapy (ICBT): n=38 • Waitlist control: n=39 Age in years [Mean (SD)]: • ICBT: 65.9 (8.5) • Waitlist control: 66.1 (9.8) Sex (M/F): • ICBT: n=12/n=24 • Waitlist control: n=16/n=23 Chronic neurological disorder category: progressive neurological diseases	ICBT 1 module per week and 15-minutes per week Q&A with therapist via written messages over 10 weeks 5 compulsory + 5 optional modules, accessed one at a time, one module per week. A module consisted of educative texts, interactive forms and a homework exercise. Protocol intervention group: Interventions for adjustment and engagement	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood
Morrow 2021 RCT Canada	N=25 adults with multiple sclerosis • Mindfulness based intervention (MBI): n=16 • Standard care: n=9 Age in years [Mean (SD)]: • MBI: 38.3 (10.0) • Standard care: 35.3 (8.7) Sex (M/F): • MBI: n=2/n=10	MBI In-person group 1-hour weekly sessions over 10 weeks Programme with a unique focus and facilitated group learning and discussions, and in-session guided mindfulness skills. Homework given for reinforcement.	Standard care Included information provision (via discussion and booklets). Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood • Coping and adjustment

Study	Population	Intervention	Comparison	Outcomes
	• Standard care: n=2/n=7 Chronic neurological disorder category: progressive neurological diseases	Protocol intervention group: Interventions for adjustment and engagement		
Moss-Morris 2013 RCT UK	N= 94 adults with multiple sclerosis • Cognitive Behavioural Therapy (CBT): n=48 • Supportive listening (SL): n=46 Age in years [Mean (SD)]: • CBT: 40.4 (8.59) • SL: 43.1 (10.49) Sex (M/F): • CBT: n=13/n=35 • SL: n=16/n=30 Chronic neurological disorder category: progressive neurological diseases	CBT 1st and 4th session face-to-face; remaining 6 sessions via telephone 8x80-90-minute sessions (first 6 sessions weekly, last 2 sessions fortnightly [50-minutes and 1-hour, respectively]) over 10 weeks. The CBT package aimed to build on people's current strengths and to identify and work on areas that may make adjusting to MS more difficult. Protocol intervention group: Interventions for adjustment and engagement	SL 1st and 4th session face-to-face; remaining 6 sessions via telephone 8x80-90-minute sessions (first 6 sessions weekly], last 2 sessions fortnightly [50-minutes and 1-hour, respectively]) over 10 weeks. The therapist's role was principally to listen, and the intervention was based upon listening skills drawn from counselling techniques including using minimal encouragers, paraphrasing, empathizing, reflecting, and summarizing.	• Physical and mental health related quality of life and social care related quality of life • Mood • Coping and adjustment
Murdoch 2020 RCT Canada	N=31 adults with Parkinson's disease • Strength, Hope and Resourcefulness Program for people with Parkinson's	SHARP-PWP In-person group 2-hours weekly over 6 weeks	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related

Study	Population	Intervention	Comparison	Outcomes
	disease (SHARP-PWP): n=15 • Waitlist control: n=16 Age in years [Mean (SD)]: • SHARP-PWP: 65.53 (9.11) • Waitlist control: 67.37 (9.8) Sex (M/F): • SHARP-PWP: n=7/n=8 • Waitlist control: n=6/n=10 Chronic neurological disorder category: progressive neurological diseases	Engaged in several arts-based activities and discussions related to living with hope and strength in the face of PD. Protocol intervention group: Interventions for adjustment and engagement		quality of life • Mood
Nathan 2017 Cluster RCT Canada	N=66 adults with diabetic peripheral neuropathy • Mindfulness: n=33 • Waitlist control: n=33 Age in years [Mean (SD)]: • Mindfulness: 59.7 (9.1) • Waitlist control: 59.8 (8.7) Sex (M/F): • Mindfulness: n=15/n=15 • Waitlist control: n=12/n=20 Chronic neurological disorder category:	Mindfulness In-person group. 2–3 study patients would join a group of 12–20 MBSR participants with a variety of complaints such as pain, anxiety, or depression. 8x2.5-hour sessions per week + 1x6-hour session on a weekend day midway through the course The course followed the original MBSR structure.	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Mood • Pain

Study	Population	Intervention	Comparison	Outcomes
	Acquired peripheral nerve disorders			
Navarta-Sanchez 2020 Cluster RCT Spain	N=140 adults with Parkinson's disease; N=177 informal carers • Psychoeducational intervention: adults with PD: n=65; informal carers: n=54 • Education programme: adults with PD n=75; carers: n=73 Characteristics for adults with PD: Age in years [Mean (SD)]: • Psychoeducational intervention: 75.4 (8.2) • Education programme: 72.4 (8.2) Sex (M/F): • Psychoeducational intervention: n=44/n=21 • Education programme: n=53/n=22 Chronic neurological disorder category: progressive neurological diseases	Psychoeducational intervention Group setting 1x90-minute session per week for 5 weeks Psychoeducational intervention which provided support to better understand and cope with PD in people with PD and their informal caregivers. People with PD and caregivers received the session at the same time in different room Protocol intervention group: Interventions for adjustment and engagement	Education programme Group setting 1x90-minute session per week for 5 weeks The education program for the control group included general information about PD, healthy lifestyles and different community resources.	• Physical and mental health related quality of life and social care related quality of life • Coping and adjustment • Carer quality of life
Okai 2013 RCT UK	N=45 adults with Parkinson's disease • CBT n=28 • Waitlist control: n=17 Age in years [Mean (SD)]:	CBT for Impulse Control Behaviour Weekly for 12 weeks Modules including assessment of problems, education and introduction to	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Mood • Coping and adjustment • Behaviour change

Study	Population	Intervention	Comparison	Outcomes
	• CBT: 59.3 (8.1) • Waitlist control: 57.9 (9.5) Sex (M/F): • CBT: n=19/n=9 • Waitlist control: n=12/n=5 Chronic neurological disorder category: progressive neurological diseases	cognitive behavioural therapy and motivational interviewing. Protocol intervention group: Interventions for adaptive dysfunction and behaviours that challenge others		
Pohl 2013 RCT Sweden	N=18 adults with Parkinson's disease • Ronnie Gardiner Rhythm and Music Method (RGRM) n=12 • Waitlist control: n=6 Age in years [Mean (SD)]: • Whole population (per group data not reported): 68.2 (5.1) Sex (M/F): • Whole population (per group data not reported): n=8/n=10 Chronic neurological disorder category: progressive neurological diseases	RGRM 2x 1-hour sessions per week for 6 weeks Protocol intervention group: Creative Therapies	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life
Ponsford 2022 RCT	N=49 adults with acquired brain injury • Positive Behaviour	PBS + PLUS	Waitlist control Continued to receive any	• Behaviour change

Study	Population	Intervention	Comparison	Outcomes
Australia	Support (PBS + PLUS): n=24 • Waitlist control: n=25 Age in years [Mean (SD)]: • PBS + PLUS: 42.92 (11.52) • Waitlist control: 43.60 (12.06) Sex (M/F): • PBS + PLUS: 91%/9% • Waitlist control: 60%/40% Chronic neurological disorder category: acquired brain injury	Session frequency negotiated over 12 months. This flexible intervention framework is a person-driven and collaborative approach to building a more meaningful life after brain injury and improving self-regulation of behaviour to achieve this. Initial sessions focussed on identifying meaningful outcomes, the steps required to achieve these and available support. A range of approaches for achieving goals were implemented. Protocol intervention group: Interventions for adaptive dysfunction and behaviours that challenge others.	concomitant care they were already receiving, with no additional treatment.	
Potter 2016 RCT UK	N=46 adults with acquired brain injury • CBT: n=26 • Waitlist control: n=20 Age in years [Mean (SD)]: • CBT: 40.1 (10.3) • Waitlist control: 43.1 (13.1) Sex (M/F): • CBT: n=15/n=11 • Waitlist control: n=10/n=10 Chronic neurological	CBT In-person 12x1-hour weekly sessions Sessions 1-3 broadly focused on problem identification, psychoeducation, socialising the person to the CBT model and formulation. Sessions 4–12 focused on individual target problems and the last 3 sessions increased focused on relapse prevention and maintaining therapeutic gains.	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood • Pain • Behaviour change

Study	Population	Intervention	Comparison	Outcomes
	disorder category: acquired brain injury	Protocol intervention group: Interventions for adjustment and engagement.		
Sesel 2022 RCT Australia	N=132 adults with multiple sclerosis • Online mindfulness based intervention (MBI): n=69 • Waitlist control: n=63 Age in years [Mean (SD)]: • Online MBI: 45.13 (10.74) • Waitlist control: 44.78 (9.71) Sex (M/F): Not reported Chronic neurological disorder category: progressive neurological diseases	Online MBI 5 interactive modules (15-minutes each) and 5 meditation audio-guides (30-minutes each) for daily practice over 8 weeks Topics included , dealing with stress, difficult sensations, emotions, and thoughts and relapse prevention. Participants were offered 5–8 brief telephone calls (tele-coaching; 10-minutes maximum) from a psychologist to encourage meditation adherence. Protocol intervention group: Interventions for adjustment and engagement.	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood
Simpson 2017 RCT UK	N=50 adults with multiple sclerosis • Mindfulness-based stress reduction (MBSR): n=25 • Waitlist control: n=25 Age in years [Mean (SD)]: • MBSR: 43.6 (10.7) • Waitlist control: 46.3 (11.1) Sex (M/F): • MBSR: n=2/n=23	MBSR In-person group. 8 sessions, 1 per week + home-practice (45-minutes daily) over 8 weeks The intervention was based on standard MBSR, including home practice materials. Protocol intervention group: Interventions for adjustment and engagement.	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood

Study	Population	Intervention	Comparison	Outcomes
	• Waitlist control: n=3/n=22 Chronic neurological disorder category: progressive neurological diseases			
Siponkoski 2022 Cross-over RCT Finland	N=38 adults with acquired brain injury • Neurological Music Therapy (NMT): n=20 • Waitlist control: n=18 Age in years [Mean (SD)]: • NMT: 41.6 (14.7) • Waitlist control: 41.8 (11.6) Sex (M/F): • NMT: n=10/n=10 • Waitlist control: n=12/n=6 Chronic neurological disorder category: acquired brain injury	NMT Individual sessions 2x1-hour sessions per week (total 20 sessions) The intervention model was adapted from two existing music therapy methods: Functionally-Oriented Music Therapy and Music-Supported Training method. Protocol intervention group: Creative Therapies	Waitlist control Continued to receive any concomitant care they were already receiving, with no additional treatment.	• Physical and mental health related quality of life and social care related quality of life • Mood • Coping and adjustment
Tornas 2016 RCT Norway	N=70 adults with acquired brain injury • Goal Management Training (GMT): n=33 • Brain Health Educational Workshop (BHW): n=37 Age in years [Mean (SD)]:	GMT 1x2-hour session every 2 weeks for 8 weeks 9 GMT modules were merged into 7, carefully addressing all core concepts of GMT in the same order. Mindfulness exercises were heavily emphasized. A new emotional regulation	BHW 1x2-hour session every 2 weeks for 8 weeks The BHW involved the use of educational materials and lifestyle topics typically part of psycho-educative rehabilitation programs.	• Physical and mental health related quality of life and social care related quality of life • Mood • Coping and adjustment

Study	Population	Intervention	Comparison	Outcomes
	• GMT: 42.1 (13.7) • BHW: 43.6 (12.4) Sex (M/F): • GMT: n=19/n=14 • BHW: n=19/n=18 Chronic neurological disorder category: acquired brain injury	module was administered after introducing key GMT concepts. Protocol intervention group: Interventions to Improve Motivation	Homework assignments and in-session tasks included readings, brain games, puzzles, and practical exercises such as logging sleep.	

ACT: acceptance and commitment therapy: BHW: brain health educational workshop; CBT: cognitive behavioural therapy; CCR: conventional cognitive rehabilitation; GMT: goal management training; hr: hour/s; ICB: impulse control behaviour; ICBT: tailored internet-based cognitive-behavioural therapy MBSR: mindfulness-based stress reduction; MS: multiple sclerosis; NMT: neurological music therapy; PBS + PLUS: positive behaviour support; PD: Parkinson's disease; READY: resilience group training; RCT: randomised controlled trial; RGRM: Ronnie Gardiner rhythm and music method; SHARP-PWP: strength, hope and resourcefulness program for people with Parkinson's disease SL: supportive listening; SSTP + ACT: stepping stones triple p plus acceptance and commitment therapy.

See the full evidence tables in appendix D and the forest plots in appendix E.

Summary of the evidence

Interventions for adjustment and engagement

A cognitive behavioural therapy (CBT) intervention in adults with acquired brain injury showed an important benefit over control in terms of physical and mental health related quality of life at post-intervention. No important differences were seen in other outcomes at post-intervention: anxiety symptoms, depressive symptoms, pain, and behaviour change at post-intervention.

A mindfulness intervention in adults with acquired peripheral nerve disorders showed an important benefit over control in terms of depressive symptoms, distress and pain severity at 3-months follow-up.

Overall, interventions in adults with multiple sclerosis showed an important benefit over control in terms of anxiety symptoms and distress at post-intervention, however no important difference was seen at follow-up (ranging from 3-6 months). No important differences were seen in other outcomes: physical and mental health related quality of life, depressive symptoms, and coping and adjustment. In sub-group analyses for the different adjustment and engagement interventions: CBT, mindfulness, and resilience group training, important benefits over control were seen in the mindfulness group and resilience group training, but no important differences were found in the CBT subgroup.

Mindfulness showed an important benefit over control for anxiety symptoms at follow-up (ranging from 3-6 months), depressive symptoms at post-intervention, distress at post-intervention, and coping and adjustment at post-intervention.

Resilience group training showed an important benefit over control for coping and adjustment at follow-up (3-months), which had not been shown post-intervention and no important benefits were seen in other outcomes: depressive symptoms, anxiety symptoms and physical and mental health related quality of life (post-intervention and 3-months follow up).

Two studies in the mindfulness group in adults with multiple sclerosis weren't included in the meta-analyses because the data were presented in a way that could not be combined with the other studies. Cavalera 2019's mindfulness intervention showed a statistically significant benefit over control in terms of physical and mental health related quality of life, anxiety and depression at post-intervention, however no important differences were seen at follow-up. The term statistically significant benefit rather than important benefit is used because although there is a statistically significant benefit, we cannot ascertain clinical importance as only f-values were reported. Sesel 2022's mindfulness intervention showed an important benefit over control for physical and mental health related quality of life at post-intervention. No important difference was seen for other outcomes: depression.

Overall, interventions in adults with Parkinson's disease showed an important benefit over control in terms of anxiety symptoms at post-intervention, however no important difference was seen at follow-up. No important differences were seen in other outcomes: physical and mental health related quality of life, depressive symptoms, pain, coping and adjustment, and carer quality of life. In sub-group analyses for the different adjustment and engagement interventions: CBT, mindfulness, and a psychoeducational intervention, important benefits over control were seen in the CBT and mindfulness groups. CBT showed an important difference over control for coping and adjustment at post-intervention. Mindfulness showed an important benefit over control for anxiety symptoms and depressive symptoms at post-intervention but this was not sustained at 20 weeks follow-up.

A mindfulness intervention for adults with functional neurological disorders showed no important difference compared with control in terms of physical and mental health related quality of life and distress.

The quality of the evidence ranged from very low to moderate. Outcomes were typically downgraded due to concerns over risk of bias from the contributing studies and imprecision in the effect estimate. Where meta-analyses were conducted, outcomes were also downgraded for inconsistency.

Interventions to improve relationships and control

An intervention in children and young people with acquired brain injury showed an important benefit over control in terms of behaviour change at post-intervention.

The quality of the evidence ranged from very low to low. Outcomes were downgraded due to concerns over risk of bias and imprecision in the effect estimate, and only came from 1 study.

Interventions to improve motivation

An intervention in adults with acquired brain injury showed an important benefit over control in terms of physical and mental health related quality of life and depressive symptoms at 6-months follow-up, respectively, but not at post-intervention. No important differences were seen in other outcomes: anxiety symptoms at post-intervention, depression symptoms at post-intervention, and coping and adjustment at post-intervention or 6-months follow-up.

The quality of the evidence was low. Outcomes were downgraded due to concerns over risk of bias and imprecision in the effect estimate, and only came from 1 study.

Interventions for adaptive dysfunction and behaviours that challenge others

Interventions in adults with acquired brain injury showed no important difference compared with control in terms of happiness and behaviour change at 12-weeks and 12-months follow-up, respectively.

An intervention in adults with Parkinson's disease showed an important benefit over control in terms of anxiety symptoms, depressive symptoms, coping and adjustment and behavioural changes at 6-months follow-up.

The quality of the evidence ranged from very low to moderate. Outcomes were typically downgraded due to concerns over risk of bias from the contributing studies and imprecision in the effect estimate.

Creative Therapies

Creative therapies in adults with acquired brain injury showed no important difference compared with control in terms of physical and mental health related quality of life, depression, and coping and adjustment.

Creative therapies in a mixed population of adults with acquired brain injury and acquired spinal cord injury showed an important benefit over control in terms of physical and mental health related quality of life at post-intervention, however no important difference was seen at 6-months. No important differences were seen in other outcomes at post-intervention or 6-months follow-up: depression and coping and adjustment.

Creative therapies in adults with multiple sclerosis showed an important benefit over control in terms of depressive symptoms at post-intervention.

Creative therapies in adults with Parkinson's disease showed no important difference compared with control in terms of physical and mental health related quality of life.

The quality of the evidence ranged from very low to moderate. Outcomes were typically downgraded due to concerns over risk of bias from the contributing studies and imprecision in the effect estimate.

There was no evidence for the following outcomes:

- Return to work, education, or training

To capture the wide range of emotional outcomes that were anticipated to be identified in this review without limitation, mood was listed as a general outcome domain in the protocol. However, to aid meta-analysis and interpretation of results, and to add context to resulting recommendations, these have been reported as specific areas of mood (for example, depression or anxiety).

See appendix F for full GRADE tables.

Economic evidence

Included studies

Three economic studies were identified which were relevant to this question (Bogosian 2015, Humphreys 2013, Mosweu 2017).

See supplementary material 2 for details on the economic search undertaken for this guideline.

Excluded studies

Economic studies not included in this review are listed, and reasons for their exclusion are provided in appendix J.

Summary of studies included in the economic evidence review

The systematic search of the economic literature undertaken for the guideline identified the following studies:

- A UK study which assessed the cost-utility of mindfulness group intervention for adults with multiple sclerosis (Bogosian 2015),
- A UK study which assessed the cost-utility of psychological adjustment group intervention for adults with multiple sclerosis (Humphreys 2013),
- A UK study which assessed the cost-utility of individual cognitive behavioural therapy for adults with multiple sclerosis (Mosweu 2017).

See the economic evidence tables in appendix H. See Table 3 to Table 5 to for the economic evidence profiles of the included studies.

Table 3: Economic evidence profile for mindfulness intervention in adults with multiple sclerosis

Study	Limitations	Applicability	Other comments	Incremental			Uncertainty
				Costs	Effect	Cost effectiveness	
Bogosian 2015 UK Cost-utility analysis	Potentially serious[1]	Directly[2]	-Economic evaluation alongside pilot RCT (Bogosian 2015, N=40) -Online mindfulness group intervention (via Skype) versus usual care -Time horizon: 3 months Outcomes: QALYs (EQ-5D-3L)	−£720	–0.006	£120,000 saved per QALY lost	-The cost difference was not significant, 95% CI: –£2,636 to £1,196 -The QALY difference was not significant, 95% CI: −0.039 to 0.027 - Probability of being cost-effective: 90% at a threshold of £20,000 per QALY gained

CI: confidence interval; EQ-5D-3L: euroqol 5-dimension 3-level; QALY: quality-adjusted life year; RCT: randomised controlled trial
1 Very short time horizon (3 months) which is very unlikely to be sufficiently long enough to capture all important differences in costs and outcomes; baseline and effectiveness based on a single small RCT (N=40); it was unclear what was included in some of the cost categories
2 UK study, QALYs estimated using EQ-5D-5L, NHS and PSS perspective

Table 4: Economic evidence profile for psychological adjustment intervention in adults with multiple sclerosis

Study	Limitations	Applicability	Other comments	Incremental			Uncertainty
				Costs	Effect	Cost effectiveness	
Humphreys 2013 UK Cost-utility analysis	Potentially serious[1]	Directly2	-Economic evaluation alongside feasibility RCT (N=151)[3] -Psychological adjustment group intervention versus usual care which did not include psychological intervention -Time horizon: 8 months	−£360	0.011	Intervention dominant	-Cost difference was not significant, 95% CI: −£842 to £122 -No uncertainty around QALYs was reported. However, differences in EQ-5D-3L were not significant at any time point.

Study	Limitations	Applicability	Other comments	Incremental			Uncertainty
				Costs	Effect	Cost effectiveness	
			-Outcome: QALYs (EQ-5D-3L)				

CI: confidence interval; EQ-5D-3L: EuroQol 5-dimensions 3-levels; N: sample size; QALY: quality-adjusted life year; RCT: randomised controlled trial

1 Short time horizon (8 months) which may not be sufficiently long enough to capture all important differences in costs and outcomes; baseline and effectiveness data from a single RCT (N=151); QALYs were not estimated however intervention resulted in higher EQ-5D-3L scores and was dominant

2 UK study; QALYs estimated using EQ-5D-3L; NHS and PSS perspective

3 This RCT was excluded from the effectiveness review because it was conducted before the 2013 cut-off year

Table 5: Economic evidence profile for cognitive behavioural therapy in adults with multiple sclerosis

Study	Limitations	Applicability	Other comments	Incremental			Uncertainty
				Costs	Effect	Cost effectiveness	
Mosweu 2017 UK Cost-utility analysis	Potentially serious[1]	Directly[2]	-Economic evaluation alongside an RCT (Moss-Morris 2013, N=94) - Cognitive behavioural therapy (a mix of face to face and telephone sessions, individual) versus supportive listening -Time horizon: 12 months -Outcome: GHQ-12 scores, QALYs (EQ-5D-3L)	£1,610	0.0053 (QALYs) 1.9572 (GHQ-12)	£303,774 per QALY gained £821 per one point improvement on GHQ-12 scale	-Cost difference was not significant, 95% CI: −£187 to £3,771 -QALY difference was not significant, 95% CI: −0.059 to 0.103 -Probability of being cost-effective: 9% at a threshold of £20,000 per QALY gained -In people showing clinical distress at baseline the ICER of intervention was reduced to £126,111 per QALY gained and £320 per point improvement on the GHQ-12 scale

CI: confidence interval; EQ-5D-3L: EuroQol 5-dimension 3-level; GHQ-12: General Health Questionnaire-12; QALY: quality-adjusted life year; RCT: randomised controlled trial

Short time horizon (12 months) which may not be sufficiently long enough to capture all important differences in costs and outcomes; baseline and effectiveness data from a single RCT (N=94)

2 UK study; QALYs estimated using EQ-5D-3L; NHS and PSS perspective

Economic model

No economic modelling was undertaken for this review because the committee agreed that other topics were higher priorities for economic evaluation.

The committee's discussion of the evidence

The outcomes that matter most

All outcomes listed in the protocol were considered to be critical and equally important for decision-making.

Mood such as anxiety and depressive symptoms, pain, coping and adjustment and behaviour change were patient-reported outcome measures assessing emotional health and mental wellbeing. The committee prioritised these outcomes as the aim of the question was to determine the effectiveness of emotional health and mental wellbeing interventions for people with CND.

Additionally, the health-related quality of life measures (both the person with CND and their carer) and return to work, education, or training outcomes were selected to assess the effect of the emotional health and mental wellbeing interventions on the lives of people with CND. The committee prioritised these outcomes as it is important to know how these interventions impact the day-to-day lives of people with CND, including psychological and emotional factors.

The quality of the evidence

The evidence was assessed using GRADE methodology and the overall confidence in the findings ranged from very low to moderate.

Findings were downgraded due to concerns relating to risk of bias (for example, when there was a lack of blinding in a study because rehabilitation interventions or controls are difficult to conceal or if there was a large loss to follow-up) and imprecision (for example, when 95% confidence intervals crossed 1 or more decision-making threshold). Evidence was also downgraded for inconsistency. A potential reason for significant heterogeneity was that the content of the interventions differed to one another, therefore interventions were sub-grouped into categories for example, CBT and mindfulness to account for this. Despite this, the content of the interventions within the group still differed leading to heterogeneity. Another potential reason for significant heterogeneity is the differences in control groups, with definitions of standard care varying across studies.

To conduct meta-analyses, outcomes were analysed as standard mean differences, due to the majority of outcomes being assessed using different validated and standardised assessment tools. Single study outcomes were also reported as standard mean deviations where possible, so that the outcomes were standardised across the review.

Not all studies could be included in the meta-analysed because some studies did not report the mean differences between baseline and post-intervention or follow-up time-points. Cavalera 2019 reported the results as f-values and insufficient data were available to calculate standard mean differences (SMD), whereas Sesel 2022 reported the overall results as Cohen's d without changes in mean score and variance from baseline so the results could not be meta-analysed alongside the other studies. In these circumstances, the individual studies were reported separately alongside the meta-analyses.

There was no evidence for the following outcomes:

- Return to work, education, or training.

See appendix F for full GRADE tables with quality ratings of all outcomes.

Benefits and harms

Designing and commissioning rehabilitation services

The committee discussed that the healthcare professionals delivering interventions to improve emotional health and mental wellbeing will vary in their experience of working with people with CND. The committee highlighted that interventions to improve emotional health and mental wellbeing such as talking therapies may need to be adapted to the needs of the person with CND, in particular people with cognitive impairment. The committee agreed that healthcare professionals working as part of a rehabilitation centre specialising in CND would be experienced in delivering interventions to improve emotional health and wellbeing in people with CND, therefore would have the expertise and knowledge to adapt interventions. Whereas healthcare professionals working in other settings for example community mental health services, may be less experienced and wouldn't have the knowledge to adapt the interventions to the needs of the person with CND. In view of this, the committee recommended that when commissioning and planning rehabilitation services to ensure there are separate local service level agreements in place for the provision of mental health services for adults, and for children and young people (CYP), with a CND. The committee also recommended to build capacity for mental health services for people with CND via local workforce skills development and communication protocols between different services involved in rehabilitation.

Pain management

The committee discussed the importance of adequate pain management during rehabilitation for people with chronic neurological disorders. Although pain was identified as an outcome of interest for interventions for emotional health and mental wellbeing, very little evidence was identified in this review and only 1 study showed benefit of interventions for adjustment and engagement in acquired peripheral nerve disorders. However, the committee's experience and expertise show how central proper analgesia is on the effectiveness of rehabilitation for chronic neurological disorders. Individuals are much less likely to complete rehabilitation programmes if they cause or exacerbate current pain levels. Unmanaged pain levels can also negatively impact physical functioning and emotional wellbeing, which can mask potential benefits of interventions. Therefore, the committee recommended that pain management should be discussed alongside rehabilitation goals and plans. They also highlighted the reciprocal nature of pain management, noting that interventions for emotional health and mental wellbeing can also act to reduce or improve pain.

Emotional health and mental wellbeing

The evidence review was designed to determine the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing in CND, however the committee highlighted the importance of practitioners selecting interventions in the context of functionally specific and wider rehabilitation assessment considerations to ensure optimal outcomes from the interventions. In view of the absence of evidence on assessment and referral, the committee agreed to use their collective experience and expertise to write recommendations on the principles of assessment and referral before discussing interventions.

The committee discussed the importance of recognising that a person with CND's emotional health and wellbeing is not static and can fluctuate throughout their lifespan and rehabilitation. The committee highlighted that adaptation and adjustment to a CND is a life-long emotional challenge, with key life stages often precipitating changes in one's emotional health and wellbeing. In the committee's experience, adaptation and adjustment to CND is not a one-off prescription, which is often overlooked by healthcare professionals leading to deterioration in emotional health and wellbeing and this in turn can have a detrimental effect on the effectiveness of other rehabilitation treatments as well. Therefore, the committee recommended that healthcare professionals consider the emotional health and wellbeing of people with CND at all stages of their lifespan and when rehabilitation is needed, paying particular attention to key life stages and the impact new challenges have on their emotional health and wellbeing.

The committee highlighted that when people with CND present with labile affect (rapid, intense, and unpredictable emotional changes), it is important to consider that these may not be symptoms of low-mood, anxiety or adjustment disorder but rather emotional lability due to brain injury. The committee agreed that people with CND are at a higher risk of emotional lability secondary to neurological injury. Therefore, the committee emphasised the need to take the possibility of emotional lability into account when planning rehabilitation and refer for appropriate management interventions.

The committee discussed the impact of the CND on the individual's self-identity, for some people the impact of the condition on their self-identity will be minimal where there has been little perceived change, however for others they will feel a completely different version of themselves. The committee emphasised that this was particularly pertinent for people with a spinal cord injury, where there are significant physical changes for example using a wheelchair adjusts their height and how they interact with the people and the world around them. However it is equally pertinent for people whose reduced cognitive abilities now prevent them from living the same independent life they lived before. In view of this, the committee agreed it was important that people with CND are given sufficient time or additional support to adjust to the impact of their condition or injuries on their sense of self, in order to engage that renewed sense of self in rehabilitation treatments. The committee emphasised that sufficient time could be defined as delaying certain aspects of rehabilitation but expediting others and additional support could include interventions deemed appropriate to support their adjustment and acceptance dependent on the situation.

The committee emphasised the importance of recognising the effect of the delivery of the care service on the emotional health and wellbeing of a person with CND, as inefficiencies in fragmented care services can lead to poorer emotional health and wellbeing. The committee discussed that quite often rehabilitation is managed by different service providers, which can lead to miscommunication between service providers, repetition of medical history taking, and a poor understanding of the person with CND's condition, in turn causing distress and having a negative impact on a person's emotional health and wellbeing. Therefore, the committee recommended that healthcare professionals assessing a person's emotional health and wellbeing recognise that unmet needs in other areas of rehabilitation for CND may have a negative impact, and that following the recommendations in this guideline, especially around the delivery, planning and coordination of rehabilitation will, by default, have a positive effect on the persons emotional health and wellbeing if implemented.

The committee highlighted the importance of family, carers and other people involved in the social network of the person with CND when delivering interventions for emotional health and wellbeing. The committee agreed that although the interventions are not aimed at these people their involvement in the delivery of the intervention is key for success. The committee

emphasised that individuals are part of family systems and the consequences of the CND can impact upon the whole family. The committee highlighted that common failures of not including the family in the rehabilitation are exclusion of family from assessment (when the family actually are the only 3rd parties who can report on previous functioning compared to current functioning), exclusion in planning of rehabilitation and support (when this has a direct impact upon the family), failure to involve in goal setting (when goals and the tasks activities needed to meet them often involve or affect family, and a failure to acknowledge or respond to the fact that family members will have their own needs following neurological impairment/injury to their loved one). Considering that rehabilitation for a person with CND is an iterative process that requires a feedback loop to develop and progress, family are a key part of that. Therefore, the committee recommended family, carers and other social networks be involved and integrated when agreeing the most appropriate interventions for emotional health and wellbeing interventions.

The committee discussed the importance of avoiding siloed goals and interventions for emotional health and wellbeing, but rather providing the goals and interventions in co-ordination with other rehabilitation interventions. In the committee's experience, integration of adaptive psychological processes to wider life skills is very important for people with CND, which allows them to adapt and focus in the moment. Often when goals and interventions for emotional health and wellbeing are offered singularly, rehabilitation is delivered at an inappropriate time and way to a person with CND, often leaving the person feeling that they have failed which in turn may be detrimental to their emotional health and wellbeing. The committee discussed an example where a person with depressive symptoms also requires physiotherapy as part of rehabilitation, noting that often the timing of appointments is not discussed and physiotherapy appointments may be scheduled for 9am, where it would be very difficult for the person to get up in time to attend the appointment. Therefore, the committee recommended that the goals and interventions for emotional health and wellbeing interventions are agreed within the context of other rehabilitation interventions.

The committee discussed the expertise of the healthcare professional delivering the intervention for emotional health and wellbeing. The committee highlighted that when referring people with CND for psychological interventions, they are often seen by healthcare professionals who don't understand the issues that people with CND face. Understanding the challenges that people with CND face is imperative, for example, people with spinal cord injuries often feel that their legs are bent or that other people see that their legs are bent when they are not, this in turn has a significant impact on body image and is important when applying psychological interventions. The committee agreed that when delivering interventions for emotional health and wellbeing an understanding of both the mental health problem and the specifics of the CND that the person has is important. Therefore, the committee recommended that providers agree where the most appropriate expertise is for the person, based on their individual needs and circumstances.

The committee noted that mental health services for people with CND are provided by a wide range of organisations in the community and that different local areas also have different arrangements in place. The committee were especially concerned that some mental health services lack knowledge about the specific emotional and mental challenges for people with CND and this can result in therapies being less effective. The committee agreed that the lead practitioner or person coordinating the holistic assessment for rehabilitation should familiarise themselves with the range of mental health services available and the specialisms in each and should take account of the specifics of the person's CND and presenting issues and should consider carefully which mental health service if most likely to meet their needs. This may involve liaising with different providers to discuss the person's needs and circumstances before a referral is made. The committee recommended that when making referrals

consideration should be given to local mental health services, local neurorehabilitation services, education services (such as SENCO and ELSAs for CYP) and third sector providers (such as Headway). The committee was concerned about the lack of expertise regarding people with CND in mental health services and agreed that local areas needed to put in place local service agreements with a range of mental health intervention providers, sharing skills and knowledge between services, to upskill local workforces to support rehabilitation pathways and better serve local communities of people with CND (including third sector providers). The committee also agreed the communication protoocls should be set up between these services to ensure people were referred to the most appropriate available service.

The committee recognised that limitations in resources may result in emotional health and wellbeing interventions not always being delivered as part of an integrated package. The committee highlighted that when services are fragmented there is a risk that the person's needs aren't fully understood, and care objectives are not met. In the absence of an integrated package, the committee discussed the importance of coordination and communication between services in the delivery of care to better understand the needs of the individual and the adaptations required by services to meet the person's needs. The committee agreed that coordination and communication between providers is imperative to tailor the care as best as possible for the person with CND. Furthermore, as the needs of the person with CND often evolves and is not static, coordination and communication should be ongoing and not a one-off occurrence. Therefore, the committee recommended that if emotional health services cannot be offered by the person's main rehabilitation service provider and referrals are made to other mental health service providers, then ongoing bidirectional communication and coordination between rehabilitation and emotional health services should be ensured to foster a holistic understanding of the individual's needs.

The committee discussed that people with CND often have needs that are fluctuating through the experience of their condition. The committee emphasised that a one-off approach to emotional health and well-being is usually not appropriate for people with CND as the challenges or difficulties they face through their life-time will change and arise at different timepoints. The committee discussed that for people with CND, accessing emotional health services is important when the individual or carer identifies a significant change in emotional health and wellbeing which is affecting their ability to function effectively in day to day activities or is affecting their ability to engage with rehabilitation designed to maintain, improve or support function or their participation in work, school, communities etc. They agreed that as part of long term rehabilitation the individual or carer should have the opportunity and autonomy to re-access services directly rather than depending on a healthcare professional to re-refer them. Therefore, the committee recommended an opt in and opt out approach for emotional health and wellbeing interventions for people with CND in order to manage fluctuating needs.This access could be initiated via a direct relationship between themselves, their carers and the service or via a single point of contact such as a key worker or complex case manager.

The committee discussed evidence from the review which showed an important benefit from CBT and mindfulness interventions compared to control for adjustment and engagement on health-related quality of life, anxiety symptoms, depressive symptoms, and distress based on the effectiveness review. The committee recognised that the quality of evidence was overall very low to low, largely due to the small sample size resulting in serious or very serious imprecision. The committee discussed that the evidence was in line with their expectations for time effect with interventions for adjustment and engagement, with significant changes on emotional health and wellbeing seen on follow-up at 8-12 weeks when lessons and techniques become consolidated, rather than immediately post-intervention. The committee

also highlighted that the interventions for adjustment and engagement were different in their duration, intensity, and delivery, therefore it was difficult to recommend a specific type of CBT or mindfulness intervention other than talking therapy for adjustment and engagement in people with CND. The committee agreed that the CBT and mindfulness interventions used sufficiently similar CBT-based techniques and had similar important benefits on health-related quality of life, anxiety symptoms, depressive symptoms, and distress. Therefore, the committee recommended CBT or mindfulness-based talking therapy interventions for people who experience low mood, anxiety, who are distressed by or have difficulties adjusting to the impact of their neurological condition.

The committee discussed the single study from the review on resilience group training for adjustment and engagement. The committee agreed that although the study classed the intervention as resilience group training, their methods were more aligned to an acceptance-based intervention, therefore the committee categorised the study as an acceptance-based intervention when discussing the evidence. The single study showed important benefits on anxiety and coping and adjustment. Despite the sparce evidence on acceptance-based interventions for adjustment and engagement in people with CND, the committee agreed that adjustment to CND is a life-long emotional challenge and interventions to support this are well established and used widely in practice for low mood, anxiety, distress or adjustment difficulties in the CND population. Therefore, similar to CBT or mindfulness-based talking therapy interventions, the committee recommended acceptance-based interventions for people who experience low mood, anxiety, who are distressed by or have difficulties adjusting to the impact of their neurological condition.

The committee also discussed the evidence from the review which showed an important benefit from motivational interviewing on improving motivation on health-related quality of life and depressive symptoms based. The committee recognised that the evidence came from 1 study and that the quality of evidence was overall very low to low. The committee discussed that the evidence was in line with their expectations for time effect with interventions for motivational interviewing, with significant changes on emotional health and wellbeing seen on follow-up when lessons and techniques become consolidated, rather than immediately post-intervention. Despite the sparce evidence from the effectiveness review on interventions for improving motivation, the committee emphasised the widespread current practice of interventions for improving motivation in people with low mood and difficulties in participation to improve engagement with other therapies that may be more costly. Therefore, the committee recommended interventions to promote motivation that are used in current practice – motivational interviewing and psychoeducation, where low mood or difficulties adjusting to the impact of a chronic neurological condition present barriers to participation in activities of daily living.

The committee discussed the evidence from the review which showed an important benefit from interventions for adaptive dysfunction and behaviours that challenge others on anxiety symptoms, depressive symptoms, coping and adjustment, and behavioural changes. The committee emphasised that although the benefit was only seen in people with Parkinson's disease, the results are applicable to other populations with CND. Interventions for adaptive dysfunction and behaviours that challenge others such as positive behaviour support (PBS) are widely used in practice for people with the most profound CND, acquired needs, and significant challenging behaviours. The committee discussed the benefit of interventions such as PBS to model appropriate behaviour for better impulse control. The committee were concerned that the absence of a recommendation on interventions for adaptive dysfunction and behaviours that challenge others would lead to a deterioration in care for those with CND and challenging behaviour, which they agreed are an underserved population. Therefore, the

committee recommended the use of neuro behavioural approaches such as PBS to support mood management and quality of life for people who show behaviours that challenge.

The committee discussed the evidence identified for creative therapies on emotional health and wellbeing in CND. The committee emphasised that the music therapy interventions in the studies were not interventions that were usually used in clinical practice to enhance emotional health and wellbeing, as their primary aim was to improve cognition. Additionally, the committee noted music therapy was the only area of creative therapies that evidence was identified in the review. For these reasons, the committee decided not to use the evidence and instead use their collective experience and expertise when making their recommendations on creative therapies, described below.

The committee discussed that creative therapies are particularly useful for specific populations of people with CND, mainly those who find it difficult to communicate verbally. The committee highlighted that some creative therapies enable people to communicate in a way that doesn't require the use of words as some people with CND don't always have the words to explain how they are feeling. Furthermore, creative therapies such as music therapy may be useful for empowering emotional expression in CYP who struggle to speak or where words aren't the preferred way of communicating. The committee agreed that for people with CND and communication difficulties, where adapted talking therapies may be inaccessible alternative therapies should be made available to improve emotional health and wellbeing. Therefore, the committee recommended the use of creative therapies for people who have difficulty engaging in talking therapies due to cognitive or communication difficulties, or for those where speaking is not their preferred way of communicating.

The committee discussed that it was difficult to recommend group over individual therapies and vice versa as there were no head-to-head trials to draw on from the evidence identified. The committee highlighted that rehabilitation models are increasingly offering group-based interventions for emotional health and wellbeing due to resource constraints. The committee agreed that whilst there are meaningful benefits to treatment in a group setting, there are also people excluded by this approach. Therefore, a one-size fits all approach is not appropriate. In view of this, the committee recommended that both individual and group interventions for low mood, anxiety and adjustment difficulties (including creative therapies where these were agreed to be appropriate) should be considered and tailored according to people's needs and preferences.

The committee discussed that talking therapies are often not adapted to the needs of people with CND. People with CND may have additional needs such as cognitive or communication deficits that need to be met to successfully participate in the interventions. The committee highlighted that adaptation of interventions to meet the needs of a person with CND is imperative for individuals to get the most out of an intervention. The committee discussed that modification may include adaptation to therapy techniques such as the use of memory or communication aids, or adaptation to delivery such as number, length, and frequency of sessions.

NICE guidance on post-traumatic stress disorder, anxiety, and depression already exist, and the committee recommended that people be treated in line with the appropriate guidelines; post-traumatic stress disorder, social anxiety disorder, generalised anxiety disorder and panic disorder in adults, depression in adults, depression in adults with a chronic physical health problem and depression in children and young people. However, they caveated that, in order for this treatment to be most effective, it should form part of an overall rehabilitation programme rather than being treated separately.

This review area is particularly paramount to rehabilitation, as CND can significantly impair daily functioning across social, physical, emotional, cognitive and spirituality domains and lead to disability.

The committee were disappointed in the paucity of effectiveness evidence identified for this review question in functional neurological disorders (FND) and children and young people. The committee therefore made 2 research recommendations covering the original review question in FND and CYP, with a view to strengthen existing recommendations and informing new recommendations in future guideline updates.

Cost effectiveness and resource use

The committee discussed that most recommendations should reflect current practices for most services. However, additional resources may be needed to bring these services to the recommended standard. Some recommendations may require more clinician time and result in more referrals to emotional health and wellbeing services. For example, considering emotional health and wellbeing at all stages of a person's life and rehabilitation may lead to more referrals to support services. More clinician time may be required, for example during assessments to understand how unmet needs in other rehabilitation areas might impact emotional health and wellbeing or considering availability of mental health services.

The committee acknowledged the current lack of mental health services for adults and CYP with CND. They discussed how the exclusion of some people with CND from mainstream services, due to the complexities of their conditions and insufficiently adapted therapies, contributes to health inequalities. Therefore, the committee recognised that their recommendation for local service agreements on mental health provision and local workforce development might need additional resources. For example, training clinicians to understand the challenges faced by people with CND when delivering emotional health and wellbeing interventions. They also acknowledged potential increased referrals and pressure on specialist services with appropriate expertise. However, they noted various referral options, including neurorehabilitation, mental health services, and third sector providers, which could help mitigate resource impact and service provision gaps.

They also highlighted many potential benefits associated with implementing these recommendations. These include reducing inefficiencies and miscommunication between service providers, as well as improving understanding of peoples' needs. This, in turn, can ensure timely and appropriate care, alleviate distress for individuals with CND, improve their emotional health and wellbeing, enhance engagement with rehabilitation services, improve overall rehabilitation outcomes, and result in potential cost savings to the NHS. The committee also noted that not everyone will require access to emotional and wellbeing services, which could help minimise potential resource impact.

The committee also discussed the need for emotional health and wellbeing interventions to be delivered as part of an integrated package. They acknowledged the challenges of implementation. Where this is not possible, they emphasised the importance of communication between rehabilitation and emotional health services to ensure a holistic understanding of individuals' needs. There may be additional resources required to facilitate ongoing communication between the services. The committee believed that any additional costs would be offset by improved outcomes and reduced costs associated with inappropriate and delayed referrals and admissions due to exacerbated problems.

In terms of emotional health and wellbeing interventions, there was evidence from 3 existing economic evaluations undertaken alongside RCTs. One UK cost-effectiveness analysis (Mosweu 2017) in people with multiple sclerosis (MS) found that cognitive behavioural

therapy (CBT) delivered using a combination of individual face-to-face and telephone consultations (versus supportive listening) resulted in an incremental cost-effectiveness ratio (ICER) of £821 per one-point improvement on the GHQ-12 scale. However, the committee explained that judging whether this represented a cost-effective outcome was difficult since a clinically meaningful change would depend on the baseline score, clinical morbidity and thresholds for severity. Nevertheless, the committee discussed that a 2 to 3 point change could be considered potentially meaningful. Achieving this change would cost between £1,600 and £2,500, which may be seen as a cost-effective result, given the significant impact of unaddressed mental health needs on overall rehabilitation engagement and outcomes.

The analysis further found that when using QALYs as an outcomes measure, the CBT resulted in an ICER of £303,774 per QALY gained and was not cost effective using NICE's threshold values of £20,000 to £30,000 per QALY gained. The CBT also had only a 9% probability of being cost effective using NICE's lower cost-effectiveness threshold of £20,000 per QALY gained. The results were slightly more favourable in people with higher clinical distress levels at baseline. However, the ICERs were well above NICE's cost-effectiveness thresholds.

Another UK cost-effectiveness analysis (Bogosian 2015) in people with MS found that mindfulness group intervention (versus usual care) resulted in cost savings and QALY loss. The intervention's ICER was £120,000 saved per QALY lost, which was cost effective. One QALY is valued at £20,000 to £30,000, and in this case, the NHS gets compensation of £120,000 for a QALY that is being lost. The intervention had a 90% probability of being cost effective at NICE's lower cost-effectiveness threshold of £20,000 per QALY gained.

A further UK cost-effectiveness analysis (Humphreys 2013) found that the psychological adjustment group intervention in people with MS (versus usual care) resulted in lower costs and higher QALYs and was, therefore, dominant. However, the cost difference was not significant, and the significance of the QALY difference was not reported.

All these studies were directly applicable to the NICE's decision-making context, but all had potentially serious methodological limitations. All studies had short time horizons ranging from 3 to 12 months. The committee explained that emotional and wellbeing therapies need time to start working, and such short time horizons are insufficient to capture significant differences in outcomes. Therefore, QALYs are likely to be underestimated in all studies. Also, studies had small sample sizes and were not powered to detect differences in costs and outcomes. The committee considered the above evidence but were reluctant to use it when making recommendations due to the outlined limitations.

Limited effectiveness evidence, small sample sizes and very low to low quality evidence meant robust de-novo economic modelling was not feasible. However, the committee explained that providing such interventions is standard practice as they are fundamental to rehabilitation. The committee also noted that these interventions would vary in duration, intensity, and delivery, based on individual needs, making it challenging to recommend a specific type of CBT or mindfulness intervention for people with CND. The committee discussed that, even though these therapies are available within neurology services, there are not enough resources to meet the demand. The committee acknowledged a lack of funding and that many individuals cannot access the support they need. Therefore, recommendations in this area may result in additional pressure on existing services. However, the committee noted that the lack of funding should not prevent them from making recommendations in this area.

The committee explained that acceptance-based interventions are well-established and widely used in practice. They also noted that CBT, mindfulness-based therapy, and acceptance-based interventions all have similar costs.

The committee discussed the increasing use of group-based interventions for emotional health and wellbeing due to resource constraints. They recommended considering and tailoring both individual and group interventions, due to the latter not being appropriate for everyone.

Similarly, interventions for adaptive dysfunction and behaviours that challenge others, such as Positive Behaviour Support (PBS), are also widely used in practice. The committee explained that adaptations for individuals with cognitive and communication difficulties, including creative therapies, memory or communication aids, and adjustments to session delivery, are current practice, and they do not anticipate additional impact on resources or costs.

Recommendations supported by this evidence review

This evidence review supports recommendations 1.3.2, 1.3.3, 1.14.3, 1.18.1 to 1.18.16 and the research recommendations on emotional health and mental wellbeing.

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Appendices

Appendix A Review protocol

Review protocol for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Table 6: Review protocol

ID	Field	Content
0.	PROSPERO registration number	CRD42023469517
1.	Review title	Rehabilitation for emotional health and well-being
2.	Review question	What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?
3.	Objective	To determine the effectiveness of interventions for improving and sustaining emotional health and mental wellbeing for people with chronic neurological disorders.
4.	Searches	The following databases will be searched: • Medline All • Embase • Cochrane Central Register of Controlled Trials (CENTRAL) • Cochrane Database of Systematic Reviews (CDSR) • PsycInfo • Social Policy and Practice Searches will be restricted by: • Date: 2013 onwards • English language • Human studies • Systematic Reviews • RCTs

ID	Field	Content
		• Non-randomised studies Other searches: • Inclusion lists of systematic reviews With the agreement of the guideline committee the searches will be re-run 6 weeks before final submission of the review and further studies retrieved for inclusion. The full search strategies will be published in the final review.
5.	Condition or domain being studied	Rehabilitation interventions to improve and sustain emotional health and mental wellbeing for people with chronic neurological disorders
6.	Population	Inclusion: Adults and children with rehabilitation needs due to the following chronic neurological disorders: • Acquired brain injury • Acquired spinal cord injury • Acquired peripheral nerve disorders • Progressive neurological diseases • Functional neurological disorders Exclusion: • Conditions which do not fit one of the 5 categories of chronic neurological disorder as defined in the guideline scope. These exclusions will be by exception and examined on a case-by-case basis rather than whole disorder groups. For example, this guideline will not cover autonomic neuropathy or the acute stabilisation of conditions such as encephalitis or hydrocephalus and will not cover degenerative disc disorder as spinal discs do not form part of the spinal cord. • Disorders for which interventions are primarily focused on altering body structure and functions, for example isolated peripheral nerve injuries such as single nerve or plexus injuries. • Surgical management of conditions (for example brain tumours, orthopaedic complications). • Conditions for which NICE rehabilitation and rehabilitation related recommendations already exist, including stroke in people aged 16 years and over, dementia including Alzheimer's disease, cerebral palsy, myalgic encephalomyelitis (or encephalopathy)/chronic fatigue syndrome and post-COVID-19 syndrome.

ID	Field	Content
		• Early rehabilitation after spinal cord injury as this will be covered in the NICE guideline on rehabilitation after traumatic injury
7.	Intervention	• **Intervention group 1: Interventions for adjustment and engagement** - Examples include, but are not limited to, Compassion-focused therapy, cognitive behavioural therapy, and grief and/or loss counselling. • **Intervention group 2: Interventions to improve relationships** - Examples include, but are not limited to, couples/family therapy (including sibling support), peer-support/be-friending (for the purposes of emotional well-being), and parenting interventions when child has changed needs. Also education and advice to improve family understanding of the person's condition or needs. • **Intervention group 3: Interventions to improve motivation** - Examples include, but are not limited to, person-centred goal setting, motivational interviewing • **Intervention group 4: Interventions for adaptive dysfunction and behaviours that challenge others** - Examples include, but are not limited to, positive behaviour support, Time Out On The Spot (TOOTS), and differential reinforcement. • **Intervention group 5: Creative therapies.** - Examples include, but are not limited to, art therapy, drama therapy, and play-based therapies (for children and young people).
8.	Comparator	Interventions compared with others in the same group or: • Placebo (placebo or sham) • Control (no intervention, waitlist, standard rehabilitation care alone, or 'usual care') • The same intervention (as listed under 'intervention') but varied in terms of: o Frequency o Intensity o Timing o Setting
9.	Types of study to be included	Include published full-text papers**: • Systematic reviews of RCTs • Experimental studies with random assignment to intervention and control groups.

ID	Field	Content
		If insufficient* RCT evidence is located to support decision making about children and young people, then experimental studies with non-random assignment to intervention and control groups (quasi-randomised controlled trials, non-randomised controlled trials and prospective and retrospective cohort studies) will also be considered, if a method of controlling for confounding variables is used. Systematic reviews of these studies will also be considered. *Sufficiency will be judged on issues such as the number and quality of the included studies; sample sizes, reported outcomes, and availability of data on subgroups of interest. **Studies must match or adjust for age and chronic neurological disorder. Other confounding factors are: • Sex • delivery setting, for instance whether community or inpatient.
10.	Other exclusion criteria	Inclusion: • Full text papers • Studies conducted in the UK, Australia, New Zealand and Canada and high-income European countries (according to the World Bank). Exclusion: • Conference abstracts/proceedings • Non-English language articles • Articles published before 2013 • Books, book chapters and theses • Papers that do not include methodological details will not be included as they do not provide sufficient information to evaluate risk of bias/study quality.
11.	Context	Recommendations will apply to all inpatient (excluding critical care units), outpatient and community settings, including tertiary settings and care homes in which either fully or partially NHS-funded rehabilitation interventions for chronic neurological disorders are provided.
12.	Primary outcomes (critical outcomes)	• **Physical and mental health related quality of life and social care related quality of life** (assessed using validated, global scales, such as the EQ5D - 3L, EQ5D - 5L, Multiple Sclerosis Impact Scale [MSIS-29 v2],

ID	Field	Content
		NeuroQOL, Quality of Life in Brain Injury [QOLIBRI], PedsQL, SF-36, WHOQOL-100, WHO-QOL-BREF, ASCOT, Warwick Edinburgh Mental Well-Being Scale, Satisfaction with Life Scale [SWLS], and ICECAP-A) • **Mood** (assessed using standardised, validated measures of anxiety and depression such as HADS, PHQ-9, Beck's Depression/Anxiety Inventory (BD/AI), DAS, CES-D, State-Trait Anxiety Inventory [STAI], Children's Depression Inventory (CDI), Children's Depression Rating Scale [CDRS] and the Geriatric Depression Scale [GDS]) • **Pain** (measured using validated tools such as the Visual Analogue Scale [VAS], Brief Pain Inventory [BPI] and the Numerical Pain Rating Scale [NPRS]) • **Coping and adjustment** (assessed using a standardised, validated measure of coping and adjustment such as Stroke Self Efficacy Scale, MS Self Efficacy Scale, Perceived Stress Scale, General Self-Efficacy Scale) • **Behaviour change** (measured using a standardised, validated, global measure of behavioural change such as St Andrews Swansea Neurobehavioral Outcome Scale [SASNOS], and the Neurobehavioral Functioning Inventory [NFR]) • **Return to work, education, or training** (assessed objectively by a count of return to work, education, training or 'meaningful activity') • **Carer quality of life** (using a validated, global measure such as the Adult Social Care Outcomes toolkit for Carers [ASCOT – Carers], the Carer Experience Scale [CES] and Adult Carers Quality of Life [AC QoL]; Caregiver Burden Scale/ Carer Strain Index; PedsQL-fim, Bakas Caregiving Outcome Scale)
13.	Secondary outcomes (important outcomes)	Not applicable.
14.	Data extraction (selection and coding)	All references identified by the searches and from other sources will be uploaded into EPPI reviewer and de-duplicated. Titles and abstracts of the retrieved citations will be screened to identify studies that potentially meet the inclusion criteria outlined in the review protocol. Dual sifting will be performed on at least 10% of records (or 300 records, whichever is smaller); 90% agreement is required and disagreements will be resolved via discussion with the senior systematic reviewer. The full set of records will not be dual screened because the population, interventions and relevant study designs are relatively clear and should be readily identified from titles and abstracts.

ID	Field	Content
		Full versions of the selected studies will be obtained for assessment. Studies that fail to meet the inclusion criteria once the full version has been checked will be excluded at this stage. Each study excluded after checking the full version will be listed, along with the reason for its exclusion. The included and excluded studies lists will be circulated to the Topic Group for their comments. Resolution of disputes will be by discussion between the senior reviewer, Topic Advisor and Chair. A standardised form will be used to extract the following data from included studies: study details (reference, country where study was carried out, type and dates), participant characteristics, inclusion and exclusion criteria, details of the interventions if relevant, setting and follow-up, relevant outcome data and source of funding. This will be quality assessed by the senior reviewer.
15.	Risk of bias (quality) assessment	Quality assessment of individual studies will be performed using the following checklists: • ROBIS tool for systematic reviews • Cochrane RoB tool v.2 for RCTs • Cochrane ROBINS-I tool for non-randomised controlled trials. • The quality assessment will be performed by one reviewer and this will be quality assessed by the senior reviewer.
16.	Strategy for data synthesis	Depending on the availability of the evidence, the findings will be summarised narratively or quantitatively. Where possible, meta-analyses will be conducted using Cochrane Review Manager software. A fixed effect meta-analysis will be conducted and data will be presented as risk ratios or odds ratios for dichotomous outcomes, and mean differences or standardised mean differences for continuous outcomes. Heterogeneity in the effect estimates of the individual studies will be assessed using the I2 statistic. Alongside visual inspection of the point estimates and confidence intervals, I2 values of greater than 50% and 80% will be considered as significant and very significant heterogeneity, respectively. Heterogeneity will be explored as appropriate using sensitivity analyses and pre-specified subgroup analyses. If heterogeneity cannot be explained through subgroup analysis then a random effects model will be used for meta-analysis, or the data will not be pooled. The confidence in the findings across all available evidence will be evaluated for each outcome using an adaptation of the 'Grading of Recommendations Assessment, Development and Evaluation (GRADE) toolbox' developed by the international GRADE working group: http://www.gradeworkinggroup.org/ Importance and imprecision of findings will be assessed against minimally important differences (MIDs). Default MIDs will be used for risk ratios and continuous outcomes only, unless the committee pre-specifies published or other MIDs for specific outcomes

ID	Field	Content	

		• For risk ratios: 0.8 and 1.25.
		• For continuous outcomes:
		  ○ MID is calculated by ranking the studies in order of SD in the control arms. The MID is calculated as +/- 0.5 times median SD.
		  ○ For studies that have been pooled using SMD (meta-analysed): +0.5 and -0.5 in the SMD scale are used as MID boundaries.	

17.	Analysis of sub-groups	Evidence will be stratified by: • Age at time of intervention (children vs. adults). Children are classified as being aged 17 years or younger. • Functional neurological disorders as distinct from the 4 other categories of neurological disorder. Evidence will be sub grouped by the following only in the event that there is significant heterogeneity in outcomes: • The 4 disorder categories not separated out through a priori stratification (acquired brain injury, acquired spinal cord injury, acquired peripheral nerve disorders and progressive neurological diseases) • Study design (RCT v. NRS) Age (for the ≤17 years of age stratification only). Categories are <4 years, 4-11 years and >11 years Where evidence is stratified or sub grouped the committee will consider on a case by case basis if separate recommendations should be made for distinct groups. Separate recommendations may be made where there is evidence of a differential effect of interventions in distinct groups. If there is a lack of evidence in one group, the committee will consider, based on their experience, whether it is reasonable to extrapolate and assume the interventions will have similar effects in that group compared with others.	
18.	Type and method of review	☒	Intervention
		☐	Diagnostic
		☐	Prognostic
		☐	Qualitative
		☐	Epidemiologic
		☐	Service Delivery
		☐	Other (please specify)
19.	Language	English	
20.	Country	England	

ID	Field	Content		
21.	Anticipated or actual start date	July 2022		
22.	Anticipated completion date	December 2023		
23.	Stage of review at time of this submission	Review stage	Started	Completed
		Preliminary searches	☑	☑
		Piloting of the study selection process	☑	☑
		Formal screening of search results against eligibility criteria	☑	☑
		Data extraction	☑	☑
		Risk of bias (quality) assessment	☑	☑
		Data analysis	☑	☑
24.	Named contact	5a Named contact National Institute for Health and Care Excellence (NICE) 5b Named contact e-mail rehabforcnd@nice.org.uk 5c Organisational affiliation of the review National Institute for Health and Care Excellence (NICE)		
25.	Review team members	NICE review team		
26.	Funding sources/sponsor	This systematic review is being completed by NICE which receives funding from the Department of Health and Social Care.		
27.	Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.		
28.	Collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual.		

ID	Field	Content	
		Members of the guideline committee are available on the NICE website: https://www.nice.org.uk/guidance/indevelopment/gid-ng10181.	
29.	Other registration details	Not applicable	
30.	Reference/URL for published protocol	crd.york.ac.uk/prospero/display_record.php?ID=CRD42023469517	
31.	Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: • notifying registered stakeholders of publication • publicising the guideline through NICE's newsletter and alerts • issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.	
32.	Keywords	Quantitative; effectiveness; personal care, activities of daily living, rehabilitation	
33.	Details of existing review of same topic by same authors	Not applicable.	
34.	Current review status	☐	Ongoing
		☐	Completed but not published
		☒	Completed and published
		☐	Completed, published and being updated
		☐	Discontinued
35.	Additional information	Not applicable.	
36.	Details of final publication	www.nice.org.uk	

ASCOT: adult social care outcomes toolkit; CDSR: Cochrane database of systematic reviews; CENTRAL: Cochrane central register of controlled trials; CES-D: Center of Epidemiological Studies-depression; DAS: depression, anxiety and stress scale; EQ 3D: EuroQoL three dimensions; EQ 5D: EuroQoL five dimensions; GRADE: grading of recommendations assessment, development and evaluation; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; ICECAP-A: ICEpop CAPability measure for adults; NeuroQOL: quality of life in neurological disorders; INAHTA: international network of agencies for health technology assessment; MEDLINE: medical literature analysis and retrieval system online; MID: minimally important difference; MS: multiple sclerosis; NICE: National Institute for Health and Care Excellence; NRS: non-randomised trials; PRESS: peer review of electronic search strategies; PedsQL-fim: paediatric quality of life inventory - family impact module; PHQ-9: patient health questionnaire; RCT: randomised controlled trial; RoB: risk of bias; ROBINS-I: risk of bias In non-randomised studies - of interventions; ROBIS: risk of bias in systematic reviews; SCI: spinal cord injury; SF-36: 36-Item Short Form Survey; SD: standard deviation; v: version; WHOQOL-BREF: World Health Organisation quality of life brief format; WHOQOL-100: World Health Organisation quality of life 100 questions

Appendix B Literature search strategies

Literature search strategies for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Review question search strategies

Databases: Medline all

Date of last search: 24/10/2023

#	Searches
1	(CRANIOCEREBRAL TRAUMA/ or brain injuries/ or exp brain hemorrhage, traumatic/ or exp brain injuries, diffuse/ or exp brain injuries, traumatic/ or exp brain injury, chronic/ or Shaken Baby Syndrome/ or HYPOXIA, BRAIN/ or Brain Damage, Chronic/ or exp INTRACRANIAL HEMORRHAGE, TRAUMATIC/ or exp BRAIN NEOPLASMS/ or BRAIN DISEASES/ or BRAIN ABSCESS/ or BRAIN DISEASES, METABOLIC/ or CEREBELLAR DISEASES/ or cerebrovascular disorders/ or basal ganglia cerebrovascular disease/ or cerebrovascular trauma/ or intracranial arteriovenous malformations/ or "intracranial embolism and thrombosis"/ or intracranial hemorrhages/ or vascular headaches/ or exp ENCEPHALITIS/ or exp HYDROCEPHALUS/) not (exp STROKE/ or dementia/)
2	((brain* or cereb* or craniocereb* or cranial or intracrani* or neurocognit*) adj2 (injur* or trauma* or damage* or disease*1 or disorder* or infect* or h?emorrhag* or neoplasm* or cancer* or tumo?r* or insult* or impair* or ischemi* or ischaemi* or infarcti* or hypoxi* or drown*)).ti,ab.
3	(chronic* adj1 trauma* adj2 encephalopath*).ti,ab.
4	((infratentorial* or supratentorial* or hypothalam* or pituitar* or choroid plexus) adj2 (neoplasm* or cancer* or tumo?r* or carcinom* or adenocarcinom*)).ti,ab.
5	(brain* adj2 abscess*).ti,ab.
6	(carotid arter* adj2 (disease* or injur*)).ti,ab.
7	("basal ganglia disease*" or encephalitis or meningoencephalitis or hydrocephal* or "paraneoplastic cereb* degenerat*" or "shak* baby syndrome*").ti,ab.
8	exp STROKE/ and (ADOLESCENT/ or MINORS/ or exp CHILD/ or exp INFANT/ or exp PEDIATRICS/ or exp PUBERTY/)
9	(stroke? adj3 (p?ediatric* or child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or schoolage* or "under 16" or "under sixteen*")).ti,ab.
10	exp SPINAL CORD INJURIES/ or exp SPINAL CORD NEOPLASMS/ or EPIDURAL ABSCESS/ or SPINAL CORD DISEASES/ or exp SPINAL CORD VASCULAR DISEASES/ or SPINAL CORD COMPRESSION/ or MYELITIS, TRANSVERSE/
11	((spinal* or spine?) adj2 (injur* or trauma* or tumo?r* or neoplasm* or cancer* or infect* or insult* or disease? or disorder* or degenrat* or compress* or vascular* or ischemi* or ischaemi* or infarct* or h?emorrhag*)).ti,ab.
12	(Central cord syndrome* or transverse myelitis).ti,ab.
13	(epidural* adj2 (neoplasm* or cancer* or tumo?r* or abscess*)).ti,ab.
14	((spinal* or spine?) adj2 (viral* or virus* or polio* or acquired immunodeficiency syndrome or AIDS or HIV or bacterial* or neurosyphili* or neuro-syphili* or tubercul*)).ti,ab.
15	PERIPHERAL NERVE INJURIES/ or exp CRANIAL NERVE INJURIES/ or PERIPHERAL NERVOUS SYSTEM NEOPLASMS/ or exp CRANIAL NERVE NEOPLASMS/ or exp PERIPHERAL NERVOUS SYSTEM DISEASES/ or exp CRANIAL NERVE DISEASES/
16	((periph* or cranial*) adj1 (nerve? or nervous system) adj2 (injur* or trauma* or disorder* or disease* or damage* or neoplasm* or cancer* or tumo?r* or inflamm* or autoimmun* or paraneoplastic* or neuropath* or syndrome?)).ti,ab.
17	(Guillain* adj1 Barr*).ti,ab.
18	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 injur*).ti,ab.
19	(optic* adj1 nerve* adj2 (neoplasm* or cancer* or tumo?r*)).ti,ab.
20	(brachial plexus adj1 (neuropath* or neuritis)).ti,ab.
21	(complex regional pain syndrome* or causalgia or mononeuropath* or nerve compression syndrome*).ti,ab.
22	((femoral or median or peroneal or radial or sciatic or tibial or ulnar) adj1 neuropath*).ti,ab.
23	((carpal-tunnel or piriformis-muscle or tarsal-tunnel or thoracic-outlet) adj1 syndrome*).ti,ab.
24	(pudendal neuralgia or polyneuropath* or polyradiculoneuropath* or polyradiculopath* or radiculopath*).ti,ab.
25	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 disease*).ti,ab.
26	(periph* adj2 neuropath*).ti,ab.
27	(((periph* or cranial*) adj2 (nerve? or nervous system)) and lupus).ti,ab.
28	((multi-focal* or multifocal*) adj2 motor adj1 neuropath*).ti,ab.
29	(((periph* or cranial*) adj2 (nerve? or nervous system)) and alcohol*).ti,ab.

#	Searches
30	exp MOTOR NEURON DISEASE/ or POSTPOLIOMYELITIS SYNDROME/ or exp PARKINSONIAN DISORDERS/ or MUSCULAR DYSTROPHY, DUCHENNE/ or exp MULTIPLE SCLEROSIS/ or NEUROMUSCULAR DISEASES/ or SPASTIC PARAPLEGIA, HEREDITARY/ or FRIEDREICH ATAXIA/ or exp MULTIPLE SYSTEM ATROPHY/ or SUPRANUCLEAR PALSY, PROGRESSIVE/ or CORTICOBASAL DEGENERATION/ or LEUKODYSTROPHY, METACHROMATIC/ or exp MITOCHONDRIAL MYOPATHIES/ or exp MUCOPOLYSACCHARIDOSES/ or WILLIAMS SYNDROME/ or GENETIC DISEASES, INBORN/ or RETT SYNDROME/ or FETAL ALCOHOL SPECTRUM DISORDERS/ or DYSTONIC DISORDERS/ or "HEREDITARY SENSORY AND MOTOR NEUROPATHY"/ or SPINAL DYSRAPHISM/
31	(neurolog* adj1 (condition* or disease* or damage* or disorder* or impair*)).ti,ab.
32	((motor-neuron* or gehrig* or charcott* or kennedy*) adj1 disease*).ti,ab.
33	((amyotroph* or primary) adj1 lateral* adj1 sclero*).ti,ab.
34	(bulbar adj1 pals*).ti,ab.
35	((muscular or muscle* or bulbo) adj1 atroph* adj1 spin*).ti,ab.
36	(progressiv* adj1 (muscular or muscle*) adj1 atroph*).ti,ab.
37	((postpolio* or post-polio*) adj1 syndrome?).ti,ab.
38	(Parkinson* or duchenne* or multiple scleros?s* or aphasia or creutzfeldt-jakob or huntington* or kluver-bucy).ti,ab.
39	(muscular adj1 dystroph*).ti,ab.
40	(neuromusc* adj1 (disease* or disorder?)).ti,ab.
41	(heredit* adj1 spastic* adj1 parapleg*).ti,ab.
42	"friedreich* ataxia*".ti,ab.
43	((multiple system or olivopontocerebellar) adj1 atroph*).ti,ab.
44	(shy-drager syndrome* or striatonigral degenerat* or batten* disease?).ti,ab.
45	(progressive adj1 supranuclear adj1 pals*).ti,ab.
46	(richardson* adj1 (disease? or syndrome?)).ti,ab.
47	((corticobasal or cortico basal) adj1 degenerat*).ti,ab.
48	(white adj1 matter adj1 disorder?).ti,ab.
49	(metachromatic leukodystroph* or mitochondrial myopath* or mucopolysaccharidos*).ti,ab.
50	(lysosomal adj1 storage adj1 disorder?).ti,ab.
51	((genetic or William* or catch-22 or rett* or congenital or f?etal alcohol) adj1 (syndrome or disorder*)).ti,ab.
52	(perinatal illness* or perinatal hypoxia*).ti,ab.
53	(primary adj1 dystonia?).ti,ab.
54	(heredit* adj1 motor* adj1 sens* adj1 neuropath*).ti,ab.
55	(spina bifida? or spinal dysraphism?).ti,ab.
56	MOVEMENT DISORDERS/ or MOTOR DISORDERS/ or CONVERSION DISORDER/
57	((functional* or psychogenic* or dissociative*) adj1 neurologic* adj1 (disorder* or dysfunction* or difficult*)).ti,ab.
58	((movement* or motor* or convers*) adj1 (disorder* or dysfunct*)).ti,ab.
59	((psychogenic or dissociative or non-epilep* or nonepilep*) adj1 (seizure* or convulsion* or fit or fits or spasm* or attack*)).ti,ab.
60	(pseudo-seizure* or pseudoseizure*).ti,ab.
61	(medical* adj1 (unexplain* or un-explain*) adj1 symptom?).ti,ab.
62	or/1-61
63	emotional health.ti,ab.
64	(emotion* adj3 (regulat* or therap* or support* or intervent* or manag*)).ti,ab.
65	(well-being or wellbeing).ti,ab.
66	(intervention? adj5 (adjust* or engag*)).ti,ab.
67	((compassion* or talk*) adj3 therap*).ti,ab.
68	COGNITIVE BEHAVIORAL THERAPY/
69	((cognitiv* or behav*) adj2 therap*).ti,ab.
70	((cognitiv* or behav*) adj (train* or treat* or intervention? or psychotherapy)).ti,ab.
71	CBT.ti,ab.
72	COUNSELING/
73	((grief or griev* or loss*) adj3 counsel*).ti,ab.
74	"ACCEPTANCE AND COMMITMENT THERAPY"/
75	(accept* adj2 commit* adj2 (therap* or intervention? or train*)).ti,ab.
76	MINDFULNESS/
77	mindfulness.ti,ab.
78	MEDITATION/
79	meditat*.ti,ab.
80	(visuali?ation adj5 (therap* or rehab* or strateg*)).ti,ab.
81	(mentali?ation or mentali?ing).ti,ab.
82	RELAXATION THERAPY/
83	(relax* adj3 (therap* or progress* or intervention? or strateg*)).ti,ab.
84	BREATHING EXERCISES/
85	(breath* adj3 (therap* or exercis* or intervention? or strateg*)).ti,ab.
86	(coping adj2 (therap* or intervention? or strateg*)).ti,ab.
87	((identit* or insight) adj3 (therap* or intervention?)).ti,ab.

#	Searches
88	INTERPERSONAL RELATIONS/
89	(intervention? adj5 relationship?).ti,ab.
90	exp PSYCHOTHERAPY, GROUP/
91	((couple? or marital or partner* or spous* or family or families or interpersonal or sibling? or brother? or sister? or stepsibling? or stepbrother? or stepsister?) adj3 therap*).ti,ab.
92	((psychotherap* or sensitive* train*) adj3 group?).ti,ab.
93	(psychodrama or role playing).ti,ab.
94	SOCIAL SUPPORT/
95	SELF-HELP GROUPS/
96	((peer? or friend*) adj3 (support* or intervention?)).ti,ab.
97	(self adj3 help* adj3 (group? or support* or therap* or interven* or tool*)).ti,ab.
98	(befriend* or be-friend*).ti,ab.
99	((parent* or mother? or father? or stepparent* or stepmother? or stepfather?) adj3 intervention?).ti,ab.
100	((educat* or advice) adj3 (family or families or wife? or wives or husband? or father? or mother? or son? or daughter?)).ti,ab.
101	(psychosexual* adj3 counsel*).ti,ab.
102	(intervention? adj5 motivat*).ti,ab.
103	GOALS/
104	((set* or person* or individual* or tailor*) adj3 goal?).ti,ab.
105	MOTIVATIONAL INTERVIEWING/
106	(motivat* adj3 interview*).ti,ab.
107	PROBLEM BEHAVIOR/
108	(intervention? adj3 adapt* adj3 dysfunction*).ti,ab.
109	(intervention? adj3 behav* adj3 (challeng* or problem* or disrupt* or dysfunction*)).ti,ab.
110	(positive* adj3 behav* adj3 support*).ti,ab.
111	"Time Out On The Spot".ti,ab.
112	TOOTS.ti,ab.
113	(differential adj3 reinforc*).ti,ab.
114	"teen* online problem solving".ti,ab.
115	TOPS.ti,ab.
116	SIGNPOSTS.ti,ab.
117	(creative* adj5 therap*).ti,ab.
118	exp SENSORY ART THERAPIES/
119	((art* or drama* or danc* or music* or play*) adj3 (therap* or intervention?)).ti,ab.
120	((psychoanalytic* or psychosocial*) adj3 therap*).ti,ab.
121	((physical* or mental* or mood? or stress* or anxiet* or depress* or pain or self effica* or selfeffica* or happiness) adj3 intervention?).ti,ab.
122	or/63-121
123	62 and 122
124	letter/
125	editorial/
126	news/
127	exp historical article/
128	Anecdotes as topic/
129	comment/
130	case reports/
131	(letter or comment*).ti.
132	or/124-131
133	randomized controlled trial/ or random*.ti,ab.
134	132 not 133
135	animals/ not humans/
136	exp Animals, Laboratory/
137	exp Animal Experimentation/
138	exp Models, Animal/
139	exp Rodentia/
140	(rat or rats or rodent* or mouse or mice).ti.
141	or/134-140
142	123 not 141
143	limit 142 to english language
144	limit 143 to yr="2013 -Current"
145	meta-analysis/
146	meta-analysis as topic/
147	(meta analy* or metanaly* or metaanaly*).ti,ab.
148	((systematic* or evidence*) adj2 (review* or overview*)).ti,ab.
149	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
150	(search strategy or search criteria or systematic search or study selection or data extraction).ab.

#	Searches
151	(search* adj4 literature).ab.
152	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
153	cochrane.jw.
154	or/145-153
155	randomized controlled trial.pt.
156	controlled clinical trial.pt.
157	pragmatic clinical trial.pt.
158	randomi#ed.ab.
159	placebo.ab.
160	randomly.ab.
161	Clinical Trials as topic.sh.
162	trial.ti.
163	or/155-162
164	exp EPIDEMIOLOGIC STUDIES/ or exp CLINICAL TRIAL/ or COMPARATIVE STUDY/
165	(control and study).mp.
166	program.mp.
167	or/164-166
168	exp Infant/ or Infant Health/ or Infant Welfare/
169	(prematur* or pre-matur* or preterm* or pre-term* or infan* or newborn* or new-born* or perinat* or peri-nat* or neonat* or neo-nat* or baby* or babies or toddler*).ti,ab,in,jn.
170	exp Child/ or exp Child Behavior/ or Child Health/ or Child Welfare/
171	Minors/
172	(child* or minor or minors or boy* or girl* or kid or kids or young*).ti,ab,in,jn.
173	exp pediatrics/
174	(pediatric* or paediatric* or peadiatric*).ti,ab,in,jn.
175	Adolescent/ or Adolescent Behavior/ or Adolescent Health/
176	Puberty/
177	(adolescen* or pubescen* or prepubescen* or pre-pubescen* or pubert* or prepubert* or pre-pubert* or teen* or preteen* or pre-teen* or juvenil* or youth* or under*age*).ti,ab,in,jn.
178	Schools/
179	Child Day Care Centers/ or exp Nurseries/ or Schools, Nursery/
180	(pre-school* or preschool* or kindergar* or daycare or day-care or nurser* or school* or pupil* or student*).ti,ab,jn.
181	("under 18*" or "under eighteen*" or "under 25*" or "under twenty five*").ti,ab.
182	or/168-181
183	144 and (154 or 163)
184	144 and 167 and 182
185	or/183-184

1

2 **Databases: Embase**

3 **Date of last search: 24/10/2023**

#	Searches
1	(head injury/ or exp brain injury/ or chronic brain disease/ or brain hemorrhage/ or brain hypoxia/ or exp brain tumor/ or brain disease/ or brain abscess/ or metabolic encephalopathy/ or cerebellum disease/ or exp cerebrovascular disease/ or encephalitis/ or hydrocephalus/) not (exp cerebrovascular accident/ or dementia/)
2	((brain* or cereb* or craniocereb* or cranial or intracrani* or neurocognit*) adj2 (injur* or trauma* or damage* or disease*1 or disorder* or infect* or h?emorrhag* or neoplasm* or cancer* or tumo?r* or insult* or impair* or ischemi* or infarcti* or hypoxi* or drown*)).ti,ab.
3	(chronic* adj1 trauma* adj2 encephalopath*).ti,ab.
4	((infratentorial* or supratentorial* or hypothalam* or pituitar* or choroid plexus) adj2 (neoplasm* or cancer* or tumo?r* or carcinom* or adenocarcinom*)).ti,ab.
5	(brain* adj2 abscess*).ti,ab.
6	(carotid arter* adj2 (disease* or injur*)).ti,ab.
7	("basal ganglia disease*" or encephalitis or meningoencephalitis or hydrocephal* or "paraneoplastic cereb* degenerat*" or "shak* baby syndrome*").ti,ab.
8	exp cerebrovascular accident/ and (adolescent/ or "minor (person)"/ or exp child/ or exp infant/ or pediatrics/ or exp pediatrics/ or exp puberty/)
9	(stroke? adj3 (p?ediatric* or child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or schoolage* or "under 16" or "under sixteen*")).ti,ab.
10	exp spinal cord injury/ or exp spinal cord tumor/ or epidural abscess/ or spinal cord disease/ or exp spinal cord vascular disease/ or spinal cord compression/ or transverse myelitis/

#	Searches
11	((spinal* or spine?) adj2 (injur* or trauma* or tumo?r* or neoplasm* or cancer* or infect* or insult* or disease? or disorder* or degenrat* or compress* or vascular* or ischemi* or ischaemi* or infarct* or h?emorrhag*)).ti,ab.
12	(Central cord syndrome* or transverse myelitis).ti,ab.
13	(epidural* adj2 (neoplasm* or cancer* or tumo?r* or abscess*)).ti,ab.
14	((spinal* or spine?) adj2 (viral* or virus* or polio* or acquired immunodeficiency syndrome or AIDS or HIV or bacterial* or neurosyphili* or neuro-syphili* or tubercul*)).ti,ab.
15	peripheral nerve injury/ or exp cranial nerve injury/ or peripheral nerve tumor/ or exp cranial nerve tumor/ or exp peripheral neuropathy/ or exp cranial neuropathy/
16	((periph* or cranial*) adj1 (nerve? or nervous system) adj2 (injur* or trauma* or disorder* or disease* or damage* or neoplasm* or cancer* or tumo?r* or inflamm* or autoimmun* or paraneoplastic* or neuropath* or syndrome?)).ti,ab.
17	(Guillain* adj1 Barr*).ti,ab.
18	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 injur*).ti,ab.
19	(optic* adj1 nerve* adj2 (neoplasm* or cancer* or tumo?r*)).ti,ab.
20	(brachial plexus adj1 (neuropath* or neuritis)).ti,ab.
21	(complex regional pain syndrome* or causalgia or mononeuropath* or nerve compression syndrome*).ti,ab.
22	((femoral or median or peroneal or radial or sciatic or tibial or ulnar) adj1 neuropath*).ti,ab.
23	((carpal-tunnel or piriformis-muscle or tarsal-tunnel or thoracic-outlet) adj1 syndrome*).ti,ab.
24	(pudendal neuralgia or polyneuropath* or polyradiculoneuropath* or polyradiculopath* or radiculopath*).ti,ab.
25	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 disease*).ti,ab.
26	(periph* adj2 neuropath*).ti,ab.
27	(((periph* or cranial*) adj2 (nerve? or nervous system)) and lupus).ti,ab.
28	((multi-focal* or multifocal*) adj2 motor adj1 neuropath*).ti,ab.
29	(((periph* or cranial*) adj2 (nerve? or nervous system)) and alcohol*).ti,ab.
30	exp motor neuron disease/ or postpoliomyelitis syndrome/ or exp parkinsonism/ or Duchenne muscular dystrophy/ or exp multiple sclerosis/ or neuromuscular disease/ or hereditary motor sensory neuropathy/ or Friedreich ataxia/ or exp Shy Drager syndrome/ or progressive supranuclear palsy/ or corticobasal degeneration/ or metachromatic leukodystrophy/ or exp mitochondrial myopathy/ or exp mucopolysaccharidosis/ or Williams Beuren syndrome/ or genetic disorder/ or Rett syndrome/ or fetal alcohol syndrome/ or dystonic disorder/ or hereditary motor sensory neuropathy/ or spinal dysraphism/
31	(neurolog* adj1 (condition* or disease* or damage* or disorder* or impair*)).ti,ab.
32	((motor-neuron* or gehrig* or charcott* or kennedy*) adj1 disease*).ti,ab.
33	((amyotroph* or primary) adj1 lateral* adj1 sclero*).ti,ab.
34	(bulbar adj1 pals*).ti,ab.
35	((muscular or muscle* or bulbo) adj1 atroph* adj1 spin*).ti,ab.
36	(progressiv* adj1 (muscular or muscle*) adj1 atroph*).ti,ab.
37	((postpolio* or post-polio*) adj1 syndrome?).ti,ab.
38	(Parkinson* or duchenne* or multiple scleros?s* or aphasia or creutzfeldt-jakob or huntington* or kluver-bucy).ti,ab.
39	(muscular adj1 dystroph*).ti,ab.
40	(neuromusc* adj1 (disease* or disorder?)).ti,ab.
41	(heredit* adj1 spastic* adj1 parapleg*).ti,ab.
42	"friedreich* ataxia*".ti,ab.
43	((multiple system or olivopontocerebellar) adj1 atroph*).ti,ab.
44	(shy-drager syndrome* or striatonigral degenerat* or batten* disease?).ti,ab.
45	(progressive adj1 supranuclear adj1 pals*).ti,ab.
46	(richardson* adj1 (disease? or syndrome?)).ti,ab.
47	((corticobasal or cortico basal) adj1 degenerat*).ti,ab.
48	(white adj1 matter adj1 disorder?).ti,ab.
49	(metachromatic leukodystroph* or mitochondrial myopath* or mucopolysaccharidos*).ti,ab.
50	(lysosomal adj1 storage adj1 disorder?).ti,ab.
51	((genetic or William* or catch-22 or rett* or congenital or f?etal alcohol) adj1 (syndrome or disorder*)).ti,ab.
52	(perinatal illness* or perinatal hypoxia*).ti,ab.
53	(primary adj1 dystonia?).ti,ab.
54	(heredit* adj1 motor* adj1 sens* adj1 neuropath*).ti,ab.
55	(spina bifida? or spinal dysraphism?).ti,ab.
56	motor dysfunction/ or motor dysfunction/ or conversion disorder/
57	((functional* or psychogenic* or dissociative*) adj1 neurologic* adj1 (disorder* or dysfunction* or difficult*)).ti,ab.
58	((movement* or motor* or convers*) adj1 (disorder* or dysfunct*)).ti,ab.
59	((psychogenic or dissociative or non-epilep* or nonepilep*) adj1 (seizure* or convulsion* or fit or fits or spasm* or attack*)).ti,ab.
60	(pseudo-seizure* or pseudoseizure*).ti,ab.
61	(medical* adj1 (unexplain* or un-explain*) adj1 symptom?).ti,ab.
62	or/1-61
63	EMOTIONAL STABILITY/
64	emotional health.ti,ab.

#	Searches
65	EMOTIONAL REGULATION/
66	EMOTIONAL SUPPORT/
67	(emotion* adj3 (regulat* or therap* or support* or intervent* or manag*)).ti,ab.
68	*WELLBEING/ or *EMOTIONAL WELL-BEING/ or *PSYCHOLOGICAL WELL-BEING/
69	(well-being or wellbeing).ti,ab.
70	(intervention? adj5 (adjust* or engag*)).ti,ab.
71	((compassion* or talk*) adj3 therap*).ti,ab.
72	exp *COGNITIVE BEHAVIORAL THERAPY/
73	((cognitiv* or behav*) adj2 therap*).ti,ab.
74	((cognitiv* or behav*) adj (train* or treat* or intervention? or psychotherapy)).ti,ab.
75	CBT.ti,ab.
76	*COUNSELING/ or *BEREAVEMENT COUNSELING/ or *PSYCHOLOGICAL COUNSELING/
77	((grief or griev* or loss*) adj3 counsel*).ti,ab.
78	"ACCEPTANCE AND COMMITMENT THERAPY"/
79	(accept* adj2 commit* adj2 (therap* or intervention? or train*)).ti,ab.
80	exp *MINDFULNESS/
81	mindfulness.ti,ab.
82	exp *MEDITATION/
83	meditat*.ti,ab.
84	(visuali?ation adj5 (therap* or rehab* or strateg*)).ti,ab.
85	MENTALIZATION/
86	(mentali?ation or mentali?ing).ti,ab.
87	*RELAXATION TRAINING/
88	(relax* adj3 (therap* or progress* or intervention? or strateg*)).ti,ab.
89	exp *BREATHING EXERCISE/
90	(breath* adj3 (therap* or exercis* or intervention? or strateg*)).ti,ab.
91	(coping adj2 (therap* or intervention? or strateg*)).ti,ab.
92	((identit* or insight) adj3 (therap* or intervention?)).ti,ab.
93	*HUMAN RELATION/
94	(intervention? adj5 relationship?).ti,ab.
95	*COUPLE THERAPY/ or exp *FAMILY THERAPY/ or *GROUP THERAPY/ or *PSYCHODRAMA/ or *ROLE PLAYING/
96	((couple? or marital or partner* or spous* or family or families or interpersonal or sibling? or brother? or sister? or stepsibling? or stepbrother? or stepsister?) adj3 therap*).ti,ab.
97	((psychotherap* or sensitive* train*) adj3 group?).ti,ab.
98	(psychodrama or role playing).ti,ab.
99	exp *SOCIAL SUPPORT/
100	*SELF HELP/
101	((peer? or friend*) adj3 (support* or intervention?)).ti,ab.
102	(self adj3 help* adj3 (group? or support* or therap* or interven* or tool*)).ti,ab.
103	(befriend* or be-friend*).ti,ab.
104	((parent* or mother? or father? or stepparent* or stepmother? or stepfather?) adj3 intervention?).ti,ab.
105	((educat* or advice) adj3 (family or families or wife? or wives or husband? or father? or mother? or son? or daughter?)).ti,ab.
106	(psychosexual* adj3 counsel*).ti,ab.
107	(intervention? adj5 motivat*).ti,ab.
108	((set* or person* or individual* or tailor*) adj3 goal?).ti,ab.
109	MOTIVATIONAL INTERVIEWING/
110	(motivat* adj3 interview*).ti,ab.
111	PROBLEM BEHAVIOR/
112	(intervention? adj3 adapt* adj3 dysfunction*).ti,ab.
113	(intervention? adj3 behav* adj3 (challeng* or problem* or disrupt* or dysfunction*)).ti,ab.
114	(positive* adj3 behav* adj3 support*).ti,ab.
115	"Time Out On The Spot".ti,ab.
116	TOOTS.ti,ab.
117	(differential adj3 reinforc*).ti,ab.
118	"teen* online problem solving".ti,ab.
119	TOPS.ti,ab.
120	SIGNPOSTS.ti,ab.
121	(creative* adj5 therap*).ti,ab.
122	*ART THERAPY/ or *DANCE THERAPY/ or *DRAMA THERAPY/ or exp *MUSIC THERAPY/ or *PLAY THERAPY/
123	((art* or drama* or danc* or music* or play*) adj3 (therap* or intervention?)).ti,ab.
124	PSYCHOSOCIAL INTERVENTION/
125	((psychoanalytic* or psychosocial*) adj3 therap*).ti,ab.
126	((physical* or mental* or mood? or stress* or anxiet* or depress* or pain or self effica* or selfeffica* or happiness) adj3 intervention?).ti,ab.

#	Searches
127	or/63-126
128	62 and 127
129	letter.pt. or letter/
130	note.pt.
131	editorial.pt.
132	case report/ or case study/
133	(letter or comment*).ti.
134	or/129-133
135	randomized controlled trial/ or random*.ti,ab.
136	134 not 135
137	animal/ not human/
138	nonhuman/
139	exp Animal Experiment/
140	exp Experimental Animal/
141	animal model/
142	exp Rodent/
143	(rat or rats or rodent* or mouse or mice).ti.
144	or/136-143
145	128 not 144
146	limit 145 to english language
147	limit 146 to yr="2013 -Current"
148	systematic review/
149	meta-analysis/
150	(meta analy* or metanaly* or metaanaly*).ti,ab.
151	((systematic or evidence) adj2 (review* or overview*)).ti,ab.
152	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
153	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
154	(search* adj4 literature).ab.
155	(medline or pubmed or cochrane or embase or psychlit or psyclit or psychinfo or psycinfo or cinahl or science citation index or bids or cancerlit).ab.
156	((pool* or combined) adj2 (data or trials or studies or results)).ab.
157	cochrane.jw.
158	or/148-157
159	random*.ti,ab.
160	factorial*.ti,ab.
161	(crossover* or cross over*).ti,ab.
162	((doubl* or singl*) adj blind*).ti,ab.
163	(assign* or allocat* or volunteer* or placebo*).ti,ab.
164	crossover procedure/
165	single blind procedure/
166	randomized controlled trial/
167	double blind procedure/
168	or/159-167
169	EPIDEMIOLOGY/ or CONTROLLED STUDY/ or exp CASE CONTROL STUDY/ or PROSPECTIVE STUDY/ or RETROSPECTIVE STUDY/ or COHORT ANALYSIS/ or FOLLOW UP/ or CROSS-SECTIONAL STUDY/ or exp CLINICAL TRIAL/ or COMPARATIVE STUDY/
170	(control and study).mp.
171	program.mp.
172	or/169-171
173	exp juvenile/ or Child Behavior/ or Child Welfare/ or Child Health/ or infant welfare/ or "minor (person)"/ or elementary student/
174	(prematur* or pre-matur* or preterm* or pre-term* or infan* or newborn* or new-born* or perinat* or peri-nat* or neonat* or neo-nat* or baby* or babies or toddler*).ti,ab,in,ad,jw.
175	(child* or minor or minors or boy* or girl* or kid or kids or young*).ti,ab,in,ad,jw.
176	exp pediatrics/
177	(pediatric* or paediatric* or peadiatric*).ti,ab,in,ad,jw.
178	exp adolescence/ or exp adolescent behavior/ or adolescent health/ or high school student/ or middle school student/
179	(adolescen* or pubescen* or prepubescen* or pre-pubescen* or pubert* or prepubert* or pre-pubert* or teen* or preteen* or pre-teen* or juvenil* or youth* or under*age*).ti,ab,in,ad,jw.
180	school/ or high school/ or kindergarten/ or middle school/ or primary school/ or nursery school/ or day care/
181	(pre-school* or preschool* or kindergar* or daycare or day-care or nurser* or school* or pupil* or student*).ti,ab,jw.
182	("under 18*" or "under eighteen*" or "under 25*" or "under twenty five*").ti,ab.
183	or/173-182
184	147 and (158 or 168)
185	147 and 172 and 183
186	or/184-185

#	Searches
187	(conference abstract* or conference review or conference paper or conference proceeding).db,pt,su.
188	186 not 187

Databases: Cochrane Central Register of Controlled Trials; and Cochrane Database of Systematic Reviews

Date of last search: 24/10/2023

#	Searches
#1	MeSH descriptor: [Craniocerebral Trauma] this term only
#2	MeSH descriptor: [Brain Injuries] this term only
#3	MeSH descriptor: [Brain Hemorrhage, Traumatic] explode all trees
#4	MeSH descriptor: [Brain Injuries, Diffuse] explode all trees
#5	MeSH descriptor: [Brain Injuries, Traumatic] explode all trees
#6	MeSH descriptor: [Brain Injury, Chronic] explode all trees
#7	MeSH descriptor: [Shaken Baby Syndrome] this term only
#8	MeSH descriptor: [Brain Damage, Chronic] this term only
#9	MeSH descriptor: [Hypoxia, Brain] this term only
#10	MeSH descriptor: [Intracranial Hemorrhage, Traumatic] explode all trees
#11	MeSH descriptor: [Brain Neoplasms] explode all trees
#12	MeSH descriptor: [Brain Diseases] this term only
#13	MeSH descriptor: [Brain Abscess] this term only
#14	MeSH descriptor: [Brain Diseases, Metabolic] this term only
#15	MeSH descriptor: [Cerebellar Diseases] this term only
#16	MeSH descriptor: [Cerebrovascular Disorders] this term only
#17	MeSH descriptor: [Basal Ganglia Cerebrovascular Disease] this term only
#18	MeSH descriptor: [Cerebrovascular Trauma] this term only
#19	MeSH descriptor: [Intracranial Arteriovenous Malformations] this term only
#20	MeSH descriptor: [Intracranial Embolism and Thrombosis] this term only
#21	MeSH descriptor: [Intracranial Hemorrhages] this term only
#22	MeSH descriptor: [Vascular Headaches] this term only
#23	MeSH descriptor: [Encephalitis] this term only
#24	MeSH descriptor: [Hydrocephalus] this term only
#25	#1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24
#26	MeSH descriptor: [Stroke] explode all trees
#27	MeSH descriptor: [Dementia] this term only
#28	#26 or #27
#29	#25 NOT #28
#30	((brain* or cereb* or craniocereb* or cranial or intracrani* or neurocognit*) NEAR/2 (injur* or trauma* or damage* or disease* or diseases* or disorder* or infect* or hemorrhag* or haemorrhag* or neoplasm* or cancer* or tumour* or tumor* or insult* or impair* or ischemi* or ischaemi* or infarcti* or hypoxi* or drown*)):ti,ab
#31	(chronic* NEAR/1 trauma* NEAR/2 encephalopath*):ti,ab
#32	((infratentorial* or supratentorial* or hypothalam* or pituitar* or "choroid plexus") NEAR/2 (neoplasm* or cancer* or tumour* or tumor* or carcinom* or adenocarcinom*)):ti,ab
#33	(brain* NEAR/2 abscess*):ti,ab
#34	(carotid arter* NEAR/2 (disease* or injur*)):ti,ab
#35	(("basal ganglia" next disease*) or encephalitis or meningoencephalitis or hydrocephal* or "paraneoplastic cerebellar" next degenerat* or "shaken baby" next syndrome* or "shaking baby" next syndrome*):ti,ab
#36	MeSH descriptor: [Stroke] explode all trees
#37	MeSH descriptor: [Adolescent] this term only
#38	MeSH descriptor: [Minors] this term only
#39	MeSH descriptor: [Child] explode all trees
#40	MeSH descriptor: [Infant] explode all trees
#41	MeSH descriptor: [Pediatrics] explode all trees
#42	MeSH descriptor: [Puberty] explode all trees
#43	#37 or #38 or #39 or #40 or #41 or #42
#44	#36 and #43
#45	((stroke or strokes) NEAR/3 (paediatric* or pediatric* or child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or "under age" or "under ages" or "under aged" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school ages" or "school age" or "school aged" or schoolage* or "under 16" or "under sixteen" or "under sixteens")):ti,ab
#46	MeSH descriptor: [Spinal Cord Injuries] explode all trees
#47	MeSH descriptor: [Spinal Cord Neoplasms] explode all trees

#	Searches
#48	MeSH descriptor: [Epidural Abscess] this term only
#49	MeSH descriptor: [Spinal Cord Diseases] this term only
#50	MeSH descriptor: [Spinal Cord Vascular Diseases] explode all trees
#51	MeSH descriptor: [Spinal Cord Compression] this term only
#52	MeSH descriptor: [Myelitis, Transverse] this term only
#53	((spinal* or spine or spines) NEAR/2 (injur* or trauma* or tumour* or tumor* or neoplasm* or cancer* or infect* or insult* or disease or diseases or disorder* or degenrat* or compress* or vascular* or ischemi* or ischaemi* or infarct* or hemorrhag* or haemorrhag*)):ti,ab
#54	("Central cord" next syndrome* or "transverse myelitis"):ti,ab
#55	(epidural* NEAR/2 (neoplasm* or cancer* or tumour* or tumor* or abscess*)):ti,ab
#56	((spinal* or spine or spines) NEAR/2 (viral* or virus* or polio* or "acquired immunodeficiency syndrome" or AIDS or HIV or bacterial* or neurosyphili* or neuro next syphili* or tubercul*)):ti,ab
#57	MeSH descriptor: [Peripheral Nerve Injuries] this term only
#58	MeSH descriptor: [Cranial Nerve Injuries] explode all trees
#59	MeSH descriptor: [Peripheral Nervous System Neoplasms] this term only
#60	MeSH descriptor: [Cranial Nerve Neoplasms] explode all trees
#61	MeSH descriptor: [Peripheral Nervous System Diseases] explode all trees
#62	MeSH descriptor: [Cranial Nerve Diseases] explode all trees
#63	((periph* or cranial*) NEAR/1 (nerve or nerves or "nervous system") NEAR/2 (injur* or trauma* or disorder* or disease* or damage* or neoplasm* or cancer* or tumour* or tumor* or inflamm* or autoimmun* or paraneoplastic* or neuropath* or syndrome*)):ti,ab
#64	(Guillain* NEAR/1 Barr*):ti,ab
#65	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or "ocular motility" or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) NEAR/1 nerve* NEAR/1 injur*):ti,ab
#66	(optic* NEAR/1 nerve* NEAR/2 (neoplasm* or cancer* or tumour* or tumor*)):ti,ab
#67	(brachial next plexus NEAR/1 (neuropath* or neuritis)):ti,ab
#68	("complex regional pain" next syndrome* or causalgia or mononeuropath* or "nerve compression" next syndrome*):ti,ab
#69	((femoral or median or peroneal or radial or sciatic or tibial or ulnar) NEAR/1 neuropath*):ti,ab
#70	((carpal next tunnel or piriformis next muscle or tarsal next tunnel or thoracic next outlet) NEAR/1 syndrome*):ti,ab
#71	((pudendal next neuralgia) or polyneuropath* or polyradiculoneuropath* or polyradiculopath* or radiculopath*):ti,ab
#72	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or "ocular motility" or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) NEAR/1 nerve* NEAR/1 disease*):ti,ab
#73	(periph* NEAR/2 neuropath*):ti,ab
#74	(((periph* or cranial*) NEAR/2 (nerve or nerves or "nervous system")) and lupus):ti,ab
#75	((multi next focal* or multifocal*) NEAR/2 motor NEAR/1 neuropath*):ti,ab
#76	(((periph* or cranial*) NEAR/2 (nerve or nerves or nervous system)) and alcohol*):ti,ab
#77	#29 or #30 or #31 or #32 or #33 or #34 or #35 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or #55 or #56 or #57 or #58 or #59 or #60 or #61 or #62 or #63 or #64 or #65 or #66 or #67 or #68 or #69 or #70 or #71 or #72 or #73 or #74 or #75 or #76
#78	MeSH descriptor: [Motor Neuron Disease] explode all trees
#79	MeSH descriptor: [Postpoliomyelitis Syndrome] this term only
#80	MeSH descriptor: [Parkinsonian Disorders] explode all trees
#81	MeSH descriptor: [Muscular Dystrophy, Duchenne] this term only
#82	MeSH descriptor: [Multiple Sclerosis] explode all trees
#83	MeSH descriptor: [Neuromuscular Diseases] this term only
#84	MeSH descriptor: [Spastic Paraplegia, Hereditary] this term only
#85	MeSH descriptor: [Friedreich Ataxia] this term only
#86	MeSH descriptor: [Multiple System Atrophy] explode all trees
#87	MeSH descriptor: [Supranuclear Palsy, Progressive] this term only
#88	MeSH descriptor: [Corticobasal Degeneration] explode all trees
#89	MeSH descriptor: [Leukodystrophy, Metachromatic] this term only
#90	MeSH descriptor: [Mitochondrial Myopathies] explode all trees
#91	MeSH descriptor: [Mucopolysaccharidoses] explode all trees
#92	MeSH descriptor: [Williams Syndrome] this term only
#93	MeSH descriptor: [Genetic Diseases, Inborn] this term only
#94	MeSH descriptor: [Rett Syndrome] this term only
#95	MeSH descriptor: [Fetal Alcohol Spectrum Disorders] this term only
#96	MeSH descriptor: [Dystonic Disorders] this term only
#97	MeSH descriptor: [Hereditary Sensory and Motor Neuropathy] this term only
#98	MeSH descriptor: [Spinal Dysraphism] this term only
#99	(neurolog* NEAR/1 (condition* or disease* or damage* or disorder* or impair*)):ti,ab
#100	((motor next neuron* or gehrig* or charcott* or kennedy*) NEAR/1 disease*):ti,ab
#101	((amyotroph* or primary) NEAR/1 lateral* NEAR/1 sclero*):ti,ab
#102	(bulbar NEAR/1 pals*):ti,ab
#103	((muscular or muscle* or bulbo) NEAR/1 atroph* NEAR/1 spin*):ti,ab

#	Searches
#104	(progressiv* NEAR/1 (muscular or muscle*) NEAR/1 atroph*):ti,ab
#105	((postpolio* or post next polio*) NEAR/1 (syndrome*)):ti,ab
#106	(Parkinson* or duchenne* or multiple next scleros* or sclerosos* or aphasia or creutzfeldt next jakob or huntington* or kluver next bucy):ti,ab
#107	(muscular NEAR/1 dystroph*):ti,ab
#108	((neurolog*) near/1 (condition* or disease* or damage* or disorder* or impair*)):ti,ab
#109	(heredit* NEAR/1 spastic* NEAR/1 parapleg*):ti,ab
#110	(friedreich* next ataxia*):ti,ab
#111	(("multiple system" or olivopontocerebellar) NEAR/1 atroph*):ti,ab
#112	((shy next drager next syndrome*) or striatonigral next degenerat* or batten next disease*):ti,ab
#113	(progressive NEAR/1 supranuclear NEAR/1 pals*):ti,ab
#114	(richardson* NEAR/1 (disease* or syndrome*)):ti,ab
#115	((corticobasal or "cortico basal") NEAR/1 degenerat*):ti,ab
#116	("white matter" NEAR/1 (disorder*)):ti,ab
#117	(metachromatic next leukodystroph* or mitochondrial next myopath* or mucopolysaccharidos*):ti,ab
#118	(lysosomal NEAR/1 storage NEAR/1 disorder*):ti,ab
#119	((genetic or William* or "catch-22" or rett* or congenital or fetal or "foetal alcohol") NEAR/1 (syndrome* or disorder*)):ti,ab
#120	(perinatal NEAR/1 (illness* or hypoxia*)):ti,ab
#121	(primary NEAR/1 (dystonia or dystonias)):ti,ab
#122	(heredit* NEAR/1 motor* NEAR/1 sens* NEAR/1 neuropath*):ti,ab
#123	(spina next (bifida or bifidas) or spinal next (dysraphism or dysraphisms)):ti,ab
#124	MeSH descriptor: [Movement Disorders] this term only
#125	MeSH descriptor: [Motor Disorders] this term only
#126	MeSH descriptor: [Conversion Disorder] this term only
#127	((functional* or psychogenic* or dissociative*) NEAR/1 neurologic* NEAR/1 (disorder* or dysfunction* or difficult*)):ti,ab
#128	((movement* or motor* or convers*) NEAR/1 (disorder* or dysfunct*)):ti,ab
#129	((psychogenic or dissociative or non-epilep* or nonepilep*) NEAR/1 (seizure* or convulsion* or fit or fits or spasm* or attack*)):ti,ab
#130	(pseudo next seizure or pseudoseizure):ti,ab
#131	(medical* NEAR/1 (unexplain* or un next explain*) NEAR/1 (symptom*)):ti,ab
#132	#77 or #78 or #79 or #80 or #81 or #82 or #83 or #84 or #85 or #86 or #87 or #88 or #89 or #90 or #91 or #92 or #93 or #94 or #95 or #96 or #97 or #98 or #99 or #100 or #101 or #102 or #103 or #104 or #105 or #106 or #107 or #108 or #109 or #110 or #111 or #112 or #113 or #114 or #115 or #116 or #117 or #118 or #119 or #120 or #121 or #122 or #123 or #124 or #125 or #126 or #127 or #128 or #129 or #130 or #131
#133	"emotional health":ti,ab
#134	(emotion* near/3 (regulat* or therap* or support* or intervent* or manag*)):ti,ab
#135	("well-being" or wellbeing):ti,ab
#136	(intervention* near/5 (adjust* or engag*)):ti,ab
#137	((compassion* or talk*) near/3 therap*):ti,ab
#138	MeSH descriptor: [Cognitive Behavioral Therapy] this term only
#139	((cognitiv* or behav*) near/2 therap*):ti,ab
#140	((cognitiv* or behav*) near/1 (train* or treat* or intervention* or psychotherapy)):ti,ab
#141	CBT:ti,ab
#142	MeSH descriptor: [Counseling] this term only
#143	((grief or griev* or loss*) near/3 counsel*):ti,ab
#144	MeSH descriptor: [Acceptance and Commitment Therapy] this term only
#145	(accept* near/2 commit* near/2 (therap* or intervention* or train*)):ti,ab
#146	MeSH descriptor: [Mindfulness] this term only
#147	mindfulness:ti,ab
#148	MeSH descriptor: [Meditation] this term only
#149	meditat*:ti,ab
#150	((visualization or visualisation) near/5 (therap* or rehab* or strateg*)):ti,ab
#151	(mentalization or mentalisation or mentalizing or mentalising):ti,ab
#152	MeSH descriptor: [Relaxation Therapy] this term only
#153	(relax* near/3 (therap* or progress* or intervention* or strateg*)):ti,ab
#154	MeSH descriptor: [Breathing Exercises] this term only
#155	(breath* near/3 (therap* or exercis* or intervention* or strateg*)):ti,ab
#156	(coping near/2 (therap* or intervention* or strateg*)):ti,ab
#157	((identit* or insight) near/3 (therap* or intervention*)):ti,ab
#158	MeSH descriptor: [Interpersonal Relations] this term only
#159	(intervention* near/5 relationship*):ti,ab
#160	MeSH descriptor: [Psychotherapy, Group] explode all trees
#161	((couple* or marital or partner* or spous* or family or families or interpersonal or sibling* or brother* or sister* or stepsibling* or stepbrother* or stepsister*) near/3 therap*):ti,ab

#	Searches
#162	((psychotherap* or (sensitive* next train*)) near/3 group*):ti,ab
#163	(psychodrama or "role playing"):ti,ab
#164	MeSH descriptor: [Social Support] this term only
#165	MeSH descriptor: [Self-Help Groups] this term only
#166	((peer or peers or friend*) near/3 (support* or intervention*)):ti,ab
#167	(self near/3 help* near/3 (group* or support* or therap* or interven* or tool*)):ti,ab
#168	(befriend* or be-friend*):ti,ab
#169	((parent* or mother* or father* or stepparent* or stepmother* or stepfather*) near/3 intervention*):ti,ab
#170	((educat* or advice) near/3 (family or families or wife* or wives or husband* or father* or mother* or son or sons or daughter*)):ti,ab
#171	(psychosexual* near/3 counsel*):ti,ab
#172	(intervention* near/5 motivat*):ti,ab
#173	MeSH descriptor: [Goals] this term only
#174	((set* or person* or individual* or tailor*) near/3 goal*):ti,ab
#175	MeSH descriptor: [Motivational Interviewing] this term only
#176	(motivat* near/3 interview*):ti,ab
#177	MeSH descriptor: [Problem Behavior] this term only
#178	(adapt* near/3 dysfunction*):ti,ab
#179	(intervention* near/3 behav* near/3 (challeng* or problem* or disrupt* or dyfunction*)):ti,ab
#180	(positive* near/3 behav* near/3 support*):ti,ab
#181	"Time Out On The Spot":ti,ab
#182	TOOTS:ti,ab
#183	(differential near/3 reinforc*):ti,ab
#184	(teen* NEXT "online problem solving"):ti,ab
#185	TOPS:ti,ab
#186	SIGNPOSTS:ti,ab
#187	(creative* near/5 therap*):ti,ab
#188	MeSH descriptor: [Sensory Art Therapies] explode all trees
#189	((art* or drama* or danc* or music* or play*) near/3 (therap* or intervention*)):ti,ab
#190	((psychoanalytic* or psychosocial*) near/3 therap*):ti,ab
#191	((physical* or mental* or mood or moods or stress* or anxiet* or depress* or pain or (self NEXT effica*) or self-effica* or happiness) near/3 intervention*):ti,ab
#192	#133 or #134 or #135 or #136 or #137 or #138 or #139 or #140 or #141 or #142 or #143 or #144 or #145 or #146 or #147 or #148 or #149 or #150 or #151 or #152 or #153 or #154 or #155 or #156 or #157 or #158 or #159 or #160 or #161 or #162 or #163 or #164 or #165 or #166 or #167 or #168 or #169 or #170 or #171 or #172 or #173 or #174 or #175 or #176 or #177 or #178 or #179 or #180 or #181 or #182 or #183 or #184 or #185 or #186 or #187 or #188 or #189 or #190 or #191
#193	#132 and #192
#194	#132 and #192 with Cochrane Library publication date Between Jan 2013 and Oct 2023, in Cochrane Reviews
#195	((clinicaltrials or trialsearch* or trial-registry or trials-registry or clinicalstudies or trialsregister* or trialregister* or trial-number* or studyregister* or study-register* or controlled-trials-com or current-controlled-trial or AMCTR or ANZCTR or ChiCTR* or CRiS or CTIS or CTRI* or DRKS* or EU-CTR* or EUCTR* or EUDRACT* or ICTRP or IRCT* or JAPIC* or JMCTR* or JRCT or ISRCTN* or LBCTR* or NTR* or ReBec* or REPEC* or RPCEC* or SLCTR or TCTR* or UMIN*):so or (ctgov or ictrp)):an
#196	#193 not #195
#197	"conference":pt
#198	#196 not #197
#199	#196 not #197 with Publication Year from 2013 to 2023, in Trials

1

2 **Databases: PsycInfo**

3 **Date of last search: 24/10/2023**

#	Searches
1	(exp Brain Injuries/ or anoxia/ or exp brain disorders/ or exp cerebrovascular disorders/ or exp headache/) not (exp Dementia/ or Cerebrovascular Accidents/)
2	((brain* or cereb* or craniocereb* or cranial or intracrani* or neurocognit*) adj2 (injur* or trauma* or damage* or disease*1 or disorder* or infect* or h?emorrhag* or neoplasm* or cancer* or tumo?r* or insult* or impair* or ischemi* or ischaemi* or infarcti* or hypoxi* or drown*)).ti,ab.
3	(chronic* adj1 trauma* adj2 encephalopath*).ti,ab.
4	((infratentorial* or supratentorial* or hypothalam* or pituitar* or choroid plexus) adj2 (neoplasm* or cancer* or tumo?r* or carcinom* or adenocarcinom*)).ti,ab.
5	(brain* adj2 abscess*).ti,ab.
6	(carotid arter* adj2 (disease* or injur*)).ti,ab.

#	Searches
7	("basal ganglia disease*" or encephalitis or meningoencephalitis or hydrocephal* or "paraneoplastic cereb* degenerat*" or "shak* baby syndrome*").ti,ab.
8	Cerebrovascular Accidents/ and (exp childhood development/ or exp adolescent development/ or pediatrics/ or puberty/)
9	(stroke? adj3 (p?ediatric* or child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or schoolage* or "under 16" or "under sixteen*")).ti,ab.
10	spinal cord injuries/ or (Spinal Cord/ and neoplasms/) or (Cardiovascular Disorders/ and spinal cord/) or exp myelitis/
11	((spinal* or spine?) adj2 (injur* or trauma* or tumo?r* or neoplasm* or cancer* or infect* or insult* or disease? or disorder* or degenrat* or compress* or vascular* or ischemi* or ischaemi* or infarct* or h?emorrhag*)).ti,ab.
12	(Central cord syndrome* or transverse myelitis).ti,ab.
13	(epidural* adj2 (neoplasm* or cancer* or tumo?r* or abscess*)).ti,ab.
14	((spinal* or spine?) adj2 (viral* or virus* or polio* or acquired immunodeficiency syndrome or AIDS or HIV or bacterial* or neurosyphili* or neuro-syphili* or tubercul*)).ti,ab.
15	(exp Peripheral Nervous System/ and (Injuries/ or neoplasms/)) or nervous system disorders/
16	((periph* or cranial*) adj1 (nerve? or nervous system) adj2 (injur* or trauma* or disorder* or disease* or damage* or neoplasm* or cancer* or tumo?r* or inflamm* or autoimmun* or paraneoplastic* or neuropath* or syndrome?)).ti,ab.
17	(Guillain* adj1 Barr*).ti,ab.
18	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 injur*).ti,ab.
19	(optic* adj1 nerve* adj2 (neoplasm* or cancer* or tumo?r*)).ti,ab.
20	(brachial plexus adj1 (neuropath* or neuritis)).ti,ab.
21	(complex regional pain syndrome* or causalgia or mononeuropath* or nerve compression syndrome*).ti,ab.
22	((femoral or median or peroneal or radial or sciatic or tibial or ulnar) adj1 neuropath*).ti,ab.
23	((carpal-tunnel or piriformis-muscle or tarsal-tunnel or thoracic-outlet) adj1 syndrome*).ti,ab.
24	(pudendal neuralgia or polyneuropath* or polyradiculoneuropath* or polyradiculopath* or radiculopath*).ti,ab.
25	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 disease*).ti,ab.
26	(periph* adj2 neuropath*).ti,ab.
27	(((periph* or cranial*) adj2 (nerve? or nervous system)) and lupus).ti,ab.
28	((multi-focal* or multifocal*) adj2 motor adj1 neuropath*).ti,ab.
29	(((periph* or cranial*) adj2 (nerve? or nervous system)) and alcohol*).ti,ab.
30	motor neurons/ or exp muscular disorders/ or exp neuromuscular disorders/ or multiple sclerosis/ or neurodegenerative diseases/ or Progressive Supranuclear Palsy/ or corticobasal degeneration/ or Metabolism Disorders/ or Williams Syndrome/ or genetic disorders/ or rett syndrome/ or fetal alcohol syndrome/ or exp peripheral neuropathy/ or spina bifida/
31	(neurolog* adj1 (condition* or disease* or damage* or disorder* or impair*)).ti,ab.
32	((motor-neuron* or gehrig* or charcott* or kennedy*) adj1 disease*).ti,ab.
33	((amyotroph* or primary) adj1 lateral* adj1 sclero*).ti,ab.
34	(bulbar adj1 pals*).ti,ab.
35	((muscular or muscle* or bulbo) adj1 atroph* adj1 spin*).ti,ab.
36	(progressiv* adj1 (muscular or muscle*) adj1 atroph*).ti,ab.
37	((postpolio* or post-polio*) adj1 syndrome?).ti,ab.
38	(Parkinson* or duchenne* or multiple scleros?s* or aphasia or creutzfeldt-jakob or huntington* or kluver-bucy).ti,ab.
39	(muscular adj1 dystroph*).ti,ab.
40	(neuromusc* adj1 (disease* or disorder?)).ti,ab.
41	(heredit* adj1 spastic* adj1 parapleg*).ti,ab.
42	"friedreich* ataxia*".ti,ab.
43	((multiple system or olivopontocerebellar) adj1 atroph*).ti,ab.
44	(shy-drager syndrome* or striatonigral degenerat* or batten* disease?).ti,ab.
45	(progressive adj1 supranuclear adj1 pals*).ti,ab.
46	(richardson* adj1 (disease? or syndrome?)).ti,ab.
47	((corticobasal or cortico basal) adj1 degenerat*).ti,ab.
48	(white adj1 matter adj1 disorder?).ti,ab.
49	(metachromatic leukodystroph* or mitochondrial myopath* or mucopolysaccharidos*).ti,ab.
50	(lysosomal adj1 storage adj1 disorder?).ti,ab.
51	((genetic or William* or catch-22 or rett* or congenital or f?etal alcohol) adj1 (syndrome or disorder*)).ti,ab.
52	(perinatal illness* or perinatal hypoxia*).ti,ab.
53	(primary adj1 dystonia?).ti,ab.
54	(heredit* adj1 motor* adj1 sens* adj1 neuropath*).ti,ab.
55	(spina bifida? or spinal dysraphism?).ti,ab.
56	conversion disorder/
57	((functional* or psychogenic* or dissociative*) adj1 neurologic* adj1 (disorder* or dysfunction* or difficult*)).ti,ab.
58	((movement* or motor* or convers*) adj1 (disorder* or dysfunct*)).ti,ab.
59	((psychogenic or dissociative or non-epilep* or nonepilep*) adj1 (seizure* or convulsion* or fit or fits or spasm* or attack*)).ti,ab.

#	Searches
60	(pseudo-seizure* or pseudoseizure*).ti,ab.
61	(medical* adj1 (unexplain* or un-explain*) adj1 symptom?).ti,ab.
62	or/1-61
63	EMOTIONAL HEALTH/
64	EMOTIONAL REGULATION/
65	EMOTIONAL SUPPORT/
66	emotional health.ti,ab.
67	(emotion* adj3 (regulat* or therap* or support* or intervent* or manag*)).ti,ab.
68	WELL BEING/
69	(well-being or wellbeing).ti,ab.
70	(intervention? adj5 (adjust* or engag*)).ti,ab.
71	((compassion* or talk*) adj3 therap*).ti,ab.
72	exp COGNITIVE BEHAVIOR THERAPY/
73	((cognitiv* or behav*) adj2 therap*).ti,ab.
74	((cognitiv* or behav*) adj (train* or treat* or intervention? or psychotherapy)).ti,ab.
75	CBT.ti,ab.
76	COUNSELING/
77	GRIEF COUNSELING/
78	((grief or griev* or loss*) adj3 counsel*).ti,ab.
79	"ACCEPTANCE AND COMMITMENT THERAPY"/
80	(accept* adj2 commit* adj2 (therap* or intervention? or train*)).ti,ab.
81	MINDFULNESS/ or exp MINDFULNESS-BASED INTERVENTIONS/
82	mindfulness.ti,ab.
83	MEDITATION/
84	meditat*.ti,ab.
85	(visuali?ation adj5 (therap* or rehab* or strateg*)).ti,ab.
86	MENTALIZATION/
87	(mentali?ation or mentali?ing).ti,ab.
88	RELAXATION THERAPY/ or PROGESSIVE RELAXATION THERAPY/
89	(relax* adj3 (therap* or progress* or intervention? or strateg*)).ti,ab.
90	BREATHING TECHNIQUES/
91	(breath* adj3 (therap* or exercis* or intervention? or strateg*)).ti,ab.
92	(coping adj2 (therap* or intervention? or strateg*)).ti,ab.
93	INSIGHT THERAPY/
94	((identit* or insight) adj3 (therap* or intervention?)).ti,ab.
95	INTERPERSONAL RELATIONSHIPS/
96	(intervention? adj5 relationship?).ti,ab.
97	GROUP PSYCHOTHERAPY/
98	COUPLES THERAPY/
99	exp FAMILY THERAPY/
100	INTERPERSONAL PSYCHOTHERAPY/
101	((couple? or marital or partner* or spous* or family or families or interpersonal or sibling? or brother? or sister? or stepsibling? or stepbrother? or stepsister?) adj3 therap*).ti,ab.
102	SENSITIVITY TRAINING/
103	((psychotherap* or sensitive* train*) adj3 group?).ti,ab.
104	PSYCHODRAMA/
105	ROLE PLAYING/
106	(psychodrama or role playing).ti,ab.
107	SOCIAL SUPPORT/
108	SUPPORT GROUPS/
109	((peer? or friend*) adj3 (support* or intervention?)).ti,ab.
110	(self adj3 help* adj3 (group? or support* or therap* or interven* or tool*)).ti,ab.
111	(befriend* or be-friend*).ti,ab.
112	((parent* or mother? or father? or stepparent* or stepmother? or stepfather?) adj3 intervention?).ti,ab.
113	((educat* or advice) adj3 (family or families or wife? or wives or husband? or father? or mother? or son? or daughter?)).ti,ab.
114	(psychosexual* adj3 counsel*).ti,ab.
115	MOTIVATION MEASURES/
116	(intervention? adj5 motivat*).ti,ab.
117	GOALS/ or GOAL ORIENTATION/ or GOAL SETTING/
118	((set* or person* or individual* or tailor*) adj3 goal?).ti,ab.
119	MOTIVATIONAL INTERVIEWING/
120	(motivat* adj3 interview*).ti,ab.
121	BEHAVIOR PROBLEMS/
122	(intervention? adj3 adapt* adj3 dysfunction*).ti,ab.
123	(intervention? adj3 behav* adj3 (challeng* or problem* or disrupt* or dysfunction*)).ti,ab.

#	Searches
124	(positive* adj3 behav* adj3 support*).ti,ab.
125	TIME OUT/
126	"Time Out On The Spot".ti,ab.
127	TOOTS.ti,ab.
128	DIFFERENTIAL REINFORCEMENT/
129	(differential adj3 reinforc*).ti,ab.
130	"teen* online problem solving".ti,ab.
131	TOPS.ti,ab.
132	SIGNPOSTS.ti,ab.
133	exp CREATIVE ARTS THERAPY/
134	PLAY THERAPY/
135	(creative* adj5 therap*).ti,ab.
136	((art* or drama* or danc* or music* or play*) adj3 (therap* or intervention?)).ti,ab.
137	((psychoanalytic* or psychosocial*) adj3 therap*).ti,ab.
138	((physical* or mental* or mood? or stress* or anxiet* or depress* or pain or self effica* or selfeffica* or happiness) adj3 intervention?).ti,ab.
139	or/63-138
140	62 and 139
141	(letter or editorial or comment reply).dt. or case report/
142	(letter or comment*).ti.
143	or/141-142
144	exp randomized controlled trial/
145	random*.ti,ab.
146	or/144-145
147	143 not 146
148	animal.po.
149	(rat or rats or rodent* or mouse or mice).ti.
150	or/147-149
151	140 not 150
152	limit 151 to english language
153	limit 152 to yr="2013 -Current"
154	(meta analysis or "systematic review").md.
155	META ANALYSIS/
156	SYSTEMATIC REVIEW/
157	(meta analy* or metanaly* or metaanaly*).ti,ab.
158	((systematic* or evidence*) adj2 (review* or overview*)).ti,ab.
159	(reference list* or bibliograph* or hand search* or manual search* or relevant journals).ab.
160	(search strategy or search criteria or systematic search or study selection or data extraction).ab.
161	(search* adj4 literature).ab.
162	((pool* or combined) adj2 (data or trials or studies or results)).ab.
163	(medline or pubmed or cochrane or embase or psychlit or psyclit or cinahl or science citation index or bids or cancerlit).ab.
164	or/154-163
165	clinical trial.md.
166	Clinical trials/
167	Randomized controlled trials/
168	Randomized clinical trials/
169	assign*.ti,ab.
170	allocat*.ti,ab.
171	crossover*.ti,ab.
172	cross over*.ti,ab.
173	((doubl* or singl*) adj blind*).ti,ab.
174	factorial*.ti,ab.
175	placebo*.ti,ab.
176	random*.ti,ab.
177	volunteer*.ti,ab.
178	trial?.ti,ab.
179	or/165-178
180	EPIDEMIOLOGY/ or PROSPECTIVE STUDIES/ or RETROSPECTIVE STUDIES/ or COHORT ANALYSIS/ or FOLLOWUP STUDIES/ or exp CLINICAL TRIALS/
181	(control and study).mp.
182	program.mp.
183	or/180-182
184	(adolescence 13 17 yrs or childhood birth 12 yrs or infancy 2 23 mo or neonatal birth 1 mo or preschool age 2 5 yrs or school age 6 12 yrs).ag.
185	Pediatrics/ or Puberty/ or Adolescence/

#	Searches
186	(child* or adolescen* or baby or babies or boy? or girl? or infan* or juvenile? or kid? or kindergar* or minors or neonat* or newborn? or p?ediatric* or prepubert* or pre pubert* or prepubescen* or pre pubescen* or preschool* or pre school* or preteen* or pre teen* or pubert* or pubescen* or schoolchild* or school age? or teen* or toddler* or young or youth?).ti,ab.
187	(child* or adolescen* or baby or babies or infan* or juvenile? or kindergar* or neonat* or newborn? or p?ediatric* or prepubert* or pre pubert* or pubert* or schoolchild* or school age?).jw.
188	or/184-187
189	153 and (164 or 179)
190	153 and 183 and 188
191	or/189-190
192	limit 191 to ("0100 journal" or "0110 peer-reviewed journal")

1

2 **Databases: Social policy and practice**

3 **Date of last search: 24/10/2023**

#	Searches
1	((brain* or cereb* or craniocereb* or cranial or intracrani* or neurocognit*) adj2 (injur* or trauma* or damage* or disease*1 or disorder* or infect* or h?emorrhag* or neoplasm* or cancer* or tumo?r* or insult* or impair* or ischemi* or infarcti* or hypoxi* or drown*)).ti,ab.
2	((brain* or cereb* or craniocereb* or cranial or intracrani* or neurocognit*) and (injur* or trauma* or damage* or disease* or disorder* or infect* or h?emorrhag* or neoplasm* or cancer* or tumo?r* or insult* or impair* or ischemi* or infarcti* or hypoxi* or drown*)).hw.
3	(chronic* adj1 trauma* adj2 encephalopath*).ti,ab.
4	(chronic* and trauma* and encephalopath*).hw.
5	((infratentorial* or supratentorial* or hypothalam* or pituitar* or choroid plexus) adj2 (neoplasm* or cancer* or tumo?r* or carcinom* or adenocarcinom*)).ti,ab.
6	((infratentorial* or supratentorial* or hypothalam* or pituitar* or choroid plexus) and (neoplasm* or cancer* or tumo?r* or carcinom* or adenocarcinom*)).hw.
7	(brain* adj2 abscess*).ti,ab.
8	(brain* and abscess*).hw.
9	(carotid arter* adj2 (disease* or injur*)).ti,ab.
10	(carotid arter* and (disease* or injur*)).hw.
11	("basal ganglia disease*" or encephalitis or meningoencephalitis or hydrocephal* or "paraneoplastic cereb* degenerat*" or "shak* baby syndrome*").ti,ab.
12	("basal ganglia disease*" or encephalitis or meningoencephalitis or hydrocephal* or "paraneoplastic cereb* degenerat*" or "shak* baby syndrome*").hw.
13	(stroke? adj3 (p?ediatric* or child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or schoolage* or "under 16" or "under sixteen*")).ti,ab.
14	(stroke? and (p?ediatric* or child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or schoolage* or "under 16" or "under sixteen*")).hw.
15	((spinal* or spine?) adj2 (injur* or trauma* or tumo?r* or neoplasm* or cancer* or infect* or insult* or disease? or disorder* or degenrat* or compress* or vascular* or ischemi* or ischaemi* or infarct* or h?emorrhag*)).ti,ab.
16	((spinal* or spine?) and (injur* or trauma* or tumo?r* or neoplasm* or cancer* or infect* or insult* or disease? or disorder* or degenrat* or compress* or vascular* or ischemi* or ischaemi* or infarct* or h?emorrhag*)).hw.
17	(Central cord syndrome* or transverse myelitis).ti,ab.
18	(Central cord syndrome* or transverse myelitis).hw.
19	(epidural* adj2 (neoplasm* or cancer* or tumo?r* or abscess*)).ti,ab.
20	(epidural* and (neoplasm* or cancer* or tumo?r* or abscess*)).hw.
21	((spinal* or spine?) adj2 (viral* or virus* or polio* or acquired immunodeficiency syndrome or AIDS or HIV or bacterial* or neurosyphili* or neuro-syphili* or tubercul*)).ti,ab.
22	((spinal* or spine?) and (viral* or virus* or polio* or acquired immunodeficiency syndrome or bacterial* or neurosyphili* or neuro-syphili* or tubercul*)).hw.
23	((periph* or cranial*) adj1 (nerve? or nervous system) adj2 (injur* or trauma* or disorder* or disease* or damage* or neoplasm* or cancer* or tumo?r* or inflamm* or autoimmun* or paraneoplastic* or neuropath* or syndrome?)).ti,ab.
24	((periph* or cranial*) and (nerve? or nervous system) and (injur* or trauma* or disorder* or disease* or damage* or neoplasm* or cancer* or tumo?r* or inflamm* or autoimmun* or paraneoplastic* or neuropath* or syndrome?)).hw.
25	(Guillain* adj1 Barr*).ti,ab.
26	(Guillain* and Barr*).hw.
27	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 injur*).ti,ab.
28	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) and nerve* and injur*).hw.
29	(optic* adj1 nerve* adj2 (neoplasm* or cancer* or tumo?r*)).ti,ab.

#	Searches
30	(optic* and nerve* and (neoplasm* or cancer* or tumo?r*)).hw.
31	(brachial plexus adj1 (neuropath* or neuritis)).ti,ab.
32	(brachial plexus and (neuropath* or neuritis)).hw.
33	(complex regional pain syndrome* or causalgia or mononeuropath* or nerve compression syndrome*).ti,ab.
34	(complex regional pain syndrome* or causalgia or mononeuropath* or nerve compression syndrome*).hw.
35	((femoral or median or peroneal or radial or sciatic or tibial or ulnar) adj1 neuropath*).ti,ab.
36	((femoral or median or peroneal or radial or sciatic or tibial or ulnar) and neuropath*).hw.
37	((carpal-tunnel or piriformis-muscle or tarsal-tunnel or thoracic-outlet) adj1 syndrome*).ti,ab.
38	((carpal-tunnel or piriformis-muscle or tarsal-tunnel or thoracic-outlet) and syndrome*).hw.
39	(pudendal neuralgia or polyneuropath* or polyradiculoneuropath* or polyradiculopath* or radiculopath*).ti,ab.
40	(pudendal neuralgia or polyneuropath* or polyradiculoneuropath* or polyradiculopath* or radiculopath*).hw.
41	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) adj1 nerve* adj1 disease*).ti,ab.
42	((abducen* or accessory or facial or glossopharyngeal or hypoglossal or oculomotor or ocular motility or olfactory or optic* or trigeminal or trochlear or vestibulocochlear) and nerve* and disease*).hw.
43	(periph* adj2 neuropath*).ti,ab.
44	(periph* and neuropath*).hw.
45	(((periph* or cranial*) adj2 (nerve? or nervous system)) and lupus).ti,ab.
46	((periph* or cranial*) and (nerve? or nervous system) and lupus).hw.
47	((multi-focal* or multifocal*) adj2 motor adj1 neuropath*).ti,ab.
48	((multi-focal* or multifocal*) and motor and neuropath*).hw.
49	(((periph* or cranial*) adj2 (nerve? or nervous system)) and alcohol*).ti,ab.
50	((periph* or cranial*) and (nerve? or nervous system) and alcohol*).hw.
51	(neurolog* adj1 (condition* or disease* or damage* or disorder* or impair*)).ti,ab.
52	(neurolog* and (condition* or disease* or damage* or disorder* or impair*)).hw.
53	((motor-neuron* or gehrig* or charcott* or kennedy*) adj1 disease*).ti,ab.
54	((motor-neuron* or gehrig* or charcott* or kennedy*) and disease*).hw.
55	((amyotroph* or primary) adj1 lateral* adj1 sclero*).ti,ab.
56	((amyotroph* or primary) and lateral* and sclero*).hw.
57	(bulbar adj1 pals*).ti,ab.
58	(bulbar and pals*).hw.
59	((muscular or muscle* or bulbo) adj1 atroph* adj1 spin*).ti,ab.
60	((muscular or muscle* or bulbo) and atroph* and spin*).hw.
61	(progressiv* adj1 (muscular or muscle*) adj1 atroph*).ti,ab.
62	(progressiv* and (muscular or muscle*) and atroph*).hw.
63	((postpolio* or post-polio*) adj1 syndrome?).ti,ab.
64	((postpolio* or post-polio*) and syndrome?).hw.
65	(Parkinson* or duchenne* or multiple scleros?s* or aphasia or creutzfeldt-jakob or huntington* or kluver-bucy).ti,ab.
66	(Parkinson* or duchenne* or multiple scleros?s* or aphasia or creutzfeldt-jakob or huntington* or kluver-bucy).hw.
67	(muscular adj1 dystroph*).ti,ab.
68	(muscular adj1 dystroph*).hw.
69	(neuromusc* adj1 (disease* or disorder?)).ti,ab.
70	(neuromusc* adj1 (disease* or disorder?)).hw.
71	(heredit* adj1 spastic* adj1 parapleg*).ti,ab.
72	(heredit* and spastic* and parapleg*).hw.
73	"friedreich* ataxia*".ti,ab.
74	"friedreich* ataxia*".hw.
75	((multiple system or olivopontocerebellar) adj1 atroph*).ti,ab.
76	((multiple system or olivopontocerebellar) and atroph*).hw.
77	(shy-drager syndrome* or striatonigral degenerat* or batten* disease?).ti,ab.
78	(shy-drager syndrome* or striatonigral degenerat* or batten* disease?).hw.
79	(progressive adj1 supranuclear adj1 pals*).ti,ab.
80	(progressive and supranuclear and pals*).hw.
81	(richardson* adj1 (disease? or syndrome?)).ti,ab.
82	(richardson* and (disease? or syndrome?)).hw.
83	((corticobasal or cortico basal) adj1 degenerat*).ti,ab.
84	((corticobasal or cortico basal) and degenerat*).hw.
85	(white adj1 matter adj1 disorder?).ti,ab.
86	(white and matter and disorder?).hw.
87	(metachromatic leukodystroph* or mitochondrial myopath* or mucopolysaccharidos*).ti,ab.
88	(metachromatic leukodystroph* or mitochondrial myopath* or mucopolysaccharidos*).hw.
89	(lysosomal adj1 storage adj1 disorder?).ti,ab.
90	(lysosomal and storage and disorder?).hw.
91	((genetic or William* or catch-22 or rett* or congenital or f?etal alcohol) adj1 (syndrome or disorder*)).ti,ab.
92	((genetic or William* or congenital or f?etal alcohol) and (syndrome or disorder*)).hw.
93	(perinatal illness* or perinatal hypoxia*).ti,ab.

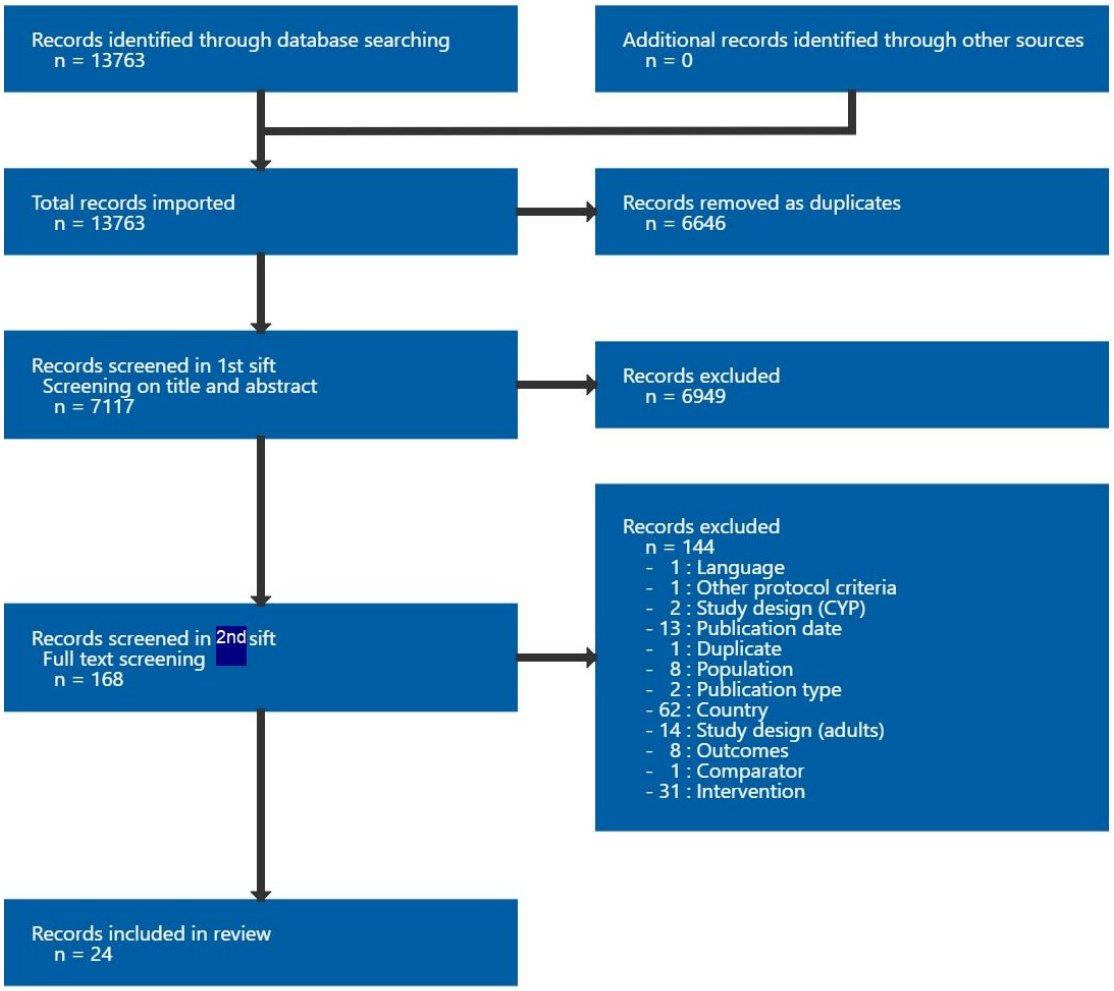
#	Searches
94	(perinatal illness* or perinatal hypoxia*).hw.
95	(primary adj1 dystonia?).ti,ab.
96	(primary and dystonia?).hw.
97	(heredit* adj1 motor* adj1 sens* adj1 neuropath*).ti,ab.
98	(heredit* and motor* and sens* and neuropath*).hw.
99	(spina bifida? or spinal dysraphism?).ti,ab.
100	(spina bifida? or spinal dysraphism?).hw.
101	((functional* or psychogenic* or dissociative*) adj1 neurologic* adj1 (disorder* or dysfunction* or difficult*)).ti,ab.
102	((functional* or psychogenic* or dissociative*) and neurologic* and (disorder* or dysfunction* or difficult*)).hw.
103	((movement* or motor* or convers*) adj1 (disorder* or dysfunct*)).ti,ab.
104	((movement* or motor* or convers*) and (disorder* or dysfunct*)).hw.
105	((psychogenic or dissociative or non-epilep* or nonepilep*) adj1 (seizure* or convulsion* or fit or fits or spasm* or attack*)).ti,ab.
106	((psychogenic or dissociative or non-epilep* or nonepilep*) and (seizure* or convulsion* or fit or fits or spasm* or attack*)).hw.
107	(pseudo-seizure* or pseudoseizure*).ti,ab.
108	(pseudo-seizure* or pseudoseizure*).hw.
109	(medical* adj1 (unexplain* or un-explain*) adj1 symptom?).ti,ab.
110	((medical* adj1 (unexplain* or un-explain*)) and symptom?).hw.
111	or/1-110
112	emotional health.ti,ab.
113	emotional health.hw.
114	(emotion* adj3 (regulat* or therap* or support* or intervent* or manag*)).ti,ab.
115	(emotion* and (regulat* or therap* or support* or intervent* or manag*)).hw.
116	(well-being or wellbeing).ti,ab.
117	(well-being or wellbeing).hw.
118	(intervention? adj5 (adjust* or engag*)).ti,ab.
119	(intervention? and (adjust* or engag*)).hw.
120	((compassion* or talk*) adj3 therap*).ti,ab.
121	((compassion* or talk*) and therap*).hw.
122	((cognitiv* or behav*) adj2 therap*).ti,ab.
123	((cognitiv* or behav*) and therap*).hw.
124	((cognitiv* or behav*) adj (train* or treat* or intervention? or psychotherapy)).ti,ab.
125	((cognitiv* or behav*) and (train* or treat* or intervention? or psychotherapy)).hw.
126	CBT.ti,ab.
127	((grief or griev* or loss*) adj3 counsel*).ti,ab.
128	((grief or griev* or loss*) and counsel*).hw.
129	(accept* adj2 commit* adj2 (therap* or intervention? or train*)).ti,ab.
130	(accept* and commit* and (therap* or intervention? or train*)).hw.
131	mindfulness.ti,ab.
132	mindfulness.hw.
133	meditat*.ti,ab.
134	meditat*.hw.
135	(visuali?ation adj5 (therap* or rehab* or strateg*)).ti,ab.
136	(visuali?ation and (therap* or rehab* or strateg*)).hw.
137	(mentali?ation or mentali?ing).ti,ab.
138	(mentali?ation or mentali?ing).hw.
139	(relax* adj3 (therap* or progress* or intervention? or strateg*)).ti,ab.
140	(relax* and (therap* or progress* or intervention? or strateg*)).hw.
141	(breath* adj3 (therap* or exercis* or intervention? or strateg*)).ti,ab.
142	(breath* and (therap* or exercis* or intervention? or strateg*)).hw.
143	(coping adj2 (therap* or intervention? or strateg*)).ti,ab.
144	(coping and (therap* or intervention? or strateg*)).hw.
145	((identit* or insight) adj3 (therap* or intervention?)).ti,ab.
146	((identit* or insight) and (therap* or intervention?)).hw.
147	(intervention? adj5 relationship?).ti,ab.
148	(intervention? and relationship?).hw.
149	((couple? or marital or partner* or spous* or family or families or interpersonal or sibling? or brother? or sister? or stepsibling? or stepbrother? or stepsister?) adj3 therap*).ti,ab.
150	((couple? or marital or partner* or spous* or family or families or interpersonal or sibling? or brother? or sister? or stepsibling? or stepbrother? or stepsister?) and therap*).hw.
151	((psychotherap* or sensitive* train*) adj3 group?).ti,ab.
152	((psychotherap* or sensitive* train*) and group?).hw.
153	(psychodrama or role playing).ti,ab.
154	(psychodrama or role playing).hw.
155	((peer? or friend*) adj3 (support* or intervention?)).ti,ab.

#	Searches
156	((peer? or friend*) and (support* or intervention?)).hw.
157	(self adj3 help* adj3 (group? or support* or therap* or interven* or tool*)).ti,ab.
158	((self adj3 help*) and (group? or support* or therap* or interven* or tool*)).hw.
159	(befriend* or be-friend*).ti,ab.
160	(befriend* or be-friend*).hw.
161	((parent* or mother? or father? or stepparent* or stepmother? or stepfather?) adj3 intervention?).ti,ab.
162	((parent* or mother? or father? or stepparent* or stepmother? or stepfather?) and intervention?).hw.
163	((educat* or advice) adj3 (family or families or wife? or wives or husband? or father? or mother? or son? or daughter?)).ti,ab.
164	((educat* or advice) and (family or families or wife? or wives or husband? or father? or mother? or son? or daughter?)).hw.
165	(psychosexual* adj3 counsel*).ti,ab.
166	(psychosexual* and counsel*).hw.
167	(intervention? adj5 motivat*).ti,ab.
168	(intervention? and motivat*).hw.
169	((set* or person* or individual* or tailor*) adj3 goal?).ti,ab.
170	((set* or person* or individual* or tailor*) and goal?).hw.
171	(motivat* adj3 interview*).ti,ab.
172	(motivat* and interview*).hw.
173	(intervention? adj3 adapt* adj3 dysfunction*).ti,ab.
174	(intervention? and adapt* and dysfunction*).hw.
175	(intervention? adj3 behav* adj3 (challeng* or problem* or disrupt* or dysfunction*)).ti,ab.
176	(intervention? and behav* and (challeng* or problem* or disrupt* or dysfunction*)).hw.
177	(positive* adj3 behav* adj3 support*).ti,ab.
178	(positive* and behav* and support*).hw.
179	"Time Out On The Spot".ti,ab.
180	"Time Out On The Spot".hw.
181	TOOTS.ti,ab.
182	(differential adj3 reinforc*).ti,ab.
183	(differential and reinforc*).hw.
184	"teen* online problem solving".ti,ab.
185	"teen* online problem solving".hw.
186	TOPS.ti,ab.
187	SIGNPOSTS.ti,ab.
188	(creative* adj5 therap*).ti,ab.
189	(creative* and therap*).hw.
190	((art* or drama* or danc* or music* or play*) adj3 (therap* or intervention?)).ti,ab.
191	((art* or drama* or danc* or music* or play*) and (therap* or intervention?)).hw.
192	((psychoanalytic* or psychosocial*) adj3 therap*).ti,ab.
193	((psychoanalytic* or psychosocial*) and therap*).hw.
194	((physical* or mental* or mood? or stress* or anxiet* or depress* or pain or self effica* or selfeffica* or happiness) adj3 intervention?).ti,ab.
195	((physical* or mental* or mood? or stress* or anxiet* or depress* or pain or self effica* or selfeffica* or happiness) and intervention?).hw.
196	or/112-195
197	111 and 196
198	limit 197 to yr="2013 -Current"

Appendix C Effectiveness evidence study seleciton

Study selection for: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Figure 1: Study selection flow chart



Appendix D Clinical evidence tables

Evidence tables for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Table 7: Evidence tables

Andrewes, 2014

Bibliographic Reference	Andrewes, H E; Walker, V; O'Neill, B; Exploring the use of positive psychology interventions in brain injury survivors with challenging behaviour.; Brain injury; 2014; vol. 28 (no. 7); 965-71

Study details

Country/ies where study was carried out	Scotland, UK
Study type	Randomised controlled trial (RCT)
Study dates	Not reported
Inclusion criteria	-Traumatic brain injury (TBI), with complex needs and challenging behaviour within a neuro-rehabilitation hospital. - Native English speakers, able to complete self-report measures of mood, actively contribute to the 12-week programme and carry out specific homework assignments.
Exclusion criteria	Not reported
Patient characteristics	N=10 adults with traumatic brain injury and history of substance misuse

	- Positive psychology intervention: n=5 - Treatment as usual: n=5 Age in years [Mean (SD)]: - Positive psychology intervention: 38.3 (5.9) - Treatment as usual: 46.0 (11.1) Sex (M/F): - Positive psychology intervention: n=5/n=0 - Treatment as usual: n=4/n=1 Time since injury (months or years not specified) [Mean (SD)]: - Positive psychology intervention: 4.2 (6.9) - Treatment as usual: 5.4 (8.9) Chronic neurological disorder category: Acquired brain injury
Intervention(s)/control	**Intervention** Name: Positive psychology intervention Protocol intervention group: Interventions for adaptive dysfunction and behaviours that challenge others Delivery setting: In-patient brain injury rehabilitation hospital Number/frequency of sessions: daily tasks set out, however no detail on number of sessions with practitioners Duration: 12 weeks Practitioner: Neuropsychologist

	Positive psychology techniques included mindfulness and importance of gratitude, values and strengths. The group also aimed to provide motivation to engage with the interventions and group members. Intervention 1: "Three good things in life" - Participants were given instructions to write three positive events that occurred each day. A half-hour period was also allocated in the group participants' timetable to write in their journal at the end of each day. Intervention 2: "Signature strengths" - Participants completed the Brief Strengths Test, which allowed them to identify their five key strengths and the values aligned with those strengths. Individual feedback sessions were conducted with facilitators after. **Control** Name: Treatment as usual Protocol description: Control (usual care) Delivery setting: In-patient brain injury rehabilitation hospital Number/ frequency of sessions: Not applicable Duration: not applicable Practitioner(s): Not applicable All participants took part in routine rehabilitation groups, focusing on psychoeducation for brain injury, social skills and meal planning. All participants in the intervention and control group were receiving weekly individual therapy sessions alongside the study, consisting of cognitive behavioural therapy and motivational interviewing for substance misuse.
Duration of follow-up	12-weeks
Sources of funding	Not industry funded
Sample size	N=10

	- Positive psychology intervention: n=5 - Treatment as usual: n=5
Other information	Eighty percent of the sample experienced substance misuse prior to brain injury and current presentation included agitation, aggression and and/or sexually inappropriate behaviour.

N/n: number of participants; RCT: randomised controlled trial; TBI: traumatic brain injury; SD: standard deviation

Outcomes

Study timepoints

- 12 weeks post intervention

Positive psychology intervention versus control: Mood

Mood as measured by AHI - Polarity - Higher values are better

Outcome	**Positive psychology intervention versus control, 12-weeks post-intervention, N=5 vs 5**
AHI F-statistic between group effect (p-value)	4.20 (0.08)

AHI: authentic happiness inventory; N/n: number of participants

Cochrane RoB 2

Section	**Question**	**Answer**
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(Simple randomisation with excel sheet and no information on allocation*

		concealment. No statistical differences in baseline characteristics, however very limited characteristics measured [sex, age, time since injury, and HADS])
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Some concerns (*No information if* p*articipants and personnel were blinded to interventions allocated, there were no deviations from intended interventions. No information if ITT performed)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	High *(20% and 0% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results were biased by missing data; loss to follow-up not balanced between groups so missingness may depend on true value.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	High *(The questionnaires used were all validated and widely used tools: AHI. No information if the assessors were blinded, but most likely not due to nature of intervention. Outcomes are all subjective and assessors helped participants to complete questionnaires, therefore could be influenced by knowledge of intervention received.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	High *(No details if protocol published. No data available on raw mean differences between intervention or control, only graphical results and final adjusted analyses.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

1 *AHI: authentic happiness inventory; HADS: hospital anxiety and depression scale; ITT: intention-to-treat analysis*

2 **Baker, 2019**

Bibliographic Reference	Baker, Felicity A; Tamplin, Jeanette; Rickard, Nikki; Ponsford, Jennie; New, Peter W; Lee, Young-Eun C; A therapeutic songwriting intervention to promote reconstruction of self-concept and enhance well-being following brain or spinal cord injury: pilot randomized controlled trial.; Clinical rehabilitation; 2019; vol. 33 (no. 6); 1045-1055

3 **Study details**

Country/ies where study was carried out	Australia
Study type	Randomised controlled trial (RCT)
Study dates	April 2015-March 2018
Inclusion criteria	- Diagnosis of spinal cord injury (traumatic or non-traumatic) or acquired brain injury (stroke, traumatic brain injury), - Aged at least 18 years of age, - Either in-patients undergoing rehabilitation, or living in the community post rehabilitation for >6 months and ≤24 months at time of study enrolment.
Exclusion criteria	- Severe cognitive impairment or memory problems, - Severe language problems or hearing impairment, - Unable to communicate in English, or - Lived more than 45 kilometres from the hospital sites.
Patient characteristics	N=47 adults with spinal cord injury or traumatic brain injury - Songwriting: n=31

	- Standard care: n=16 Age in years [Mean (SD)]: - Songwriting: 49.6 (18.5) - Standard care: 44.7 (17.5) Sex (M/F): - Songwriting: n=17/n=14 - Standard care: n=8/n=7 Time since injury in days [Mean (SD)]: - Songwriting: 391.1 (309.2) - Standard care: 427.1 (230.6) Chronic neurological disorder category: Acquired brain injury or spinal injury
Intervention(s)/control	**Intervention** Name: Songwriting Protocol intervention group: Creative therapies Delivery setting: therapy room at rehabilitation site (in-patient) or participants home (community dwelling) Number/frequency of sessions: 2x60-minute sessions per week (12 in total) Duration: 6 weeks Practitioner: Music Therapist The intervention was based on self-concept by asking participants to reflect on aspects of themselves and name how they saw themselves in relation to each other. They would consider these subdomains within

	three temporal contexts: how they perceived themselves prior to acquiring the neurological disability (past self); how they perceived themselves at the current point in time (present self): and how they imagined they might be in the near future (future self). These self-perceptions and their personal stories were then transformed into lyrics and music with the support of the music therapist. Three songs were created, one for each time point (past, present, and imagined future selves). **Control** Name: Standard care Protocol description: Control (standard care) Delivery setting: Not applicable Number/ frequency of sessions: Not applicable Duration: Not applicable Practitioner(s): Not applicable Continued to receive therapies and clinical services they were engaged in pre-allocation. No additional treatment.
Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	N=47 - Songwriting: n=31 - Standard care: n=16
Other information	32% of population were adult stroke survivors (outside protocol)

1 *N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation*

1

Outcomes

Study timepoints

- Baseline
- Post intervention (6 weeks from baseline)
- 6 months post intervention

Songwriting versus standard care: physical and mental health related quality of life and social care related quality of life, mood, coping and adjustment

Physical and mental health related quality of life and social care related quality of life as measured by SWLS overall score - Polarity - Higher values are better

Mood as measured by PHQ-9 overall score - Polarity - Lower values are better

Coping and adjustment as measured by ERQ-Supp - Polarity - Lower values are better

Coping and adjustment as measured by ERQ-Reap - Polarity - Higher values are better

Outcome	Songwriting, post-intervention, N = 15	Songwriting, 6-months post-intervention, N = 8	Standard care, post-intervention, N = 16	Standard care, 6-months post-intervention, N = 7
SWLS change in score from baseline Mean (SD)	2.5 (4.48)	0.6 (4.46)	-1.5 (5.3)	1.4 (5.6)

Outcome	Songwriting, post-intervention, N = 15	Songwriting, 6-months post-intervention, N = 8	Standard care, post-intervention, N = 16	Standard care, 6-months post-intervention, N = 7
PHQ-9 change in score from baseline Mean (SD)	-1.7 (3.2)	-4.7 (3.7)	-0.7 (4.6)	-1.1 (3.1)
ERQ-Supp change in score from baseline Mean (SD)	-1.4 (3.06)	-1.4 (3)	1 (4.1)	0.7 (4.05)
ERQ-Reap change in score from baseline Mean (SD)	3 (3.3)	13.5 (8.2)	1.5 (4.2)	8.8 (8)

ERQ-Supp: emotion regulation questionnaire-suppression; ERQ-Reap: emotion regulation questionnaire - reappraisal; N/n: number of participants; PHQ-9: patient health questionnaire; SMD: standard mean deviation; SWLS: satisfaction with life scale

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-generated randomisation list and random numbers were concealed in opaque envelopes. No statistical differences in baseline characteristics.)*

Section	Question	Answer
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Some concerns *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. No information if ITT performed. Significant number of participants not analysed at follow-up.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	High *(74% and 57% of participants in the intervention and control groups, respectively were not analysed at 6-months. Reason for attrition was discharge home from in-patient setting and declined to come back to the setting to continue with the trial. No sensitivity analyses conducted.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: PHQ, ERQ. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

ERQ: emotion regulation questionnaire; ITT: intention-to-treat; PHQ-9: patient health questionnaire

1

2 **Bogosian, 2015**

Bibliographic Reference	Bogosian, A; Chadwick, P; Windgassen, S; Norton, S; McCrone, P; Mosweu, I; Silber, E; Moss-Morris, R; Distress improves after mindfulness training for progressive MS: A pilot randomised trial.; Multiple sclerosis (Houndmills, Basingstoke, England); 2015; vol. 21 (no. 9); 1184-94

3 **Study details**

Country/ies where study was carried out	United Kingdom
Study type	Randomised controlled trial (RCT)
Study dates	December 2012 - May 2013
Inclusion criteria	- Diagnosis of PPMS or SPMS, - Internet access, and - Some level of distress determined by a score of 3 or greater on the General Health Questionnaire.
Exclusion criteria	- Severe cognitive impairment, as determined by a score of 20 or smaller on the Telephone Interview for Cognitive Status Modified - High suicide risk, as assessed by a score of 20 or greater on the Clinical Outcome of Routine Evaluation - Any serious psychological disorders (for example, psychosis, substance abuse), severe hearing impairment, attending other psychological therapies or prior formal training in mindfulness.
Patient characteristics	N= 40 adults with multiple sclerosis - Mindfulness: n=19 - Waitlist control: n=21

	Age in years [Mean (SD)]: - Mindfulness: 53.42 (8.3) - Waitlist control: 50.9 (9.9) Sex (M/F): - Mindfulness: n=10/n=9 - Waitlist control: n=8/n=13 Time since diagnosis in years [Mean (SD)]: - Mindfulness: 16.24 (10.1) - Waitlist control: 12.57 (8.6) Chronic Neurological Disorder Category: Progressive neurological diseases
Intervention(s)/control	**Intervention** Name: Mindfulness Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Group Skype videoconferences (5 participants per group) Number/frequency of sessions: 8x1-hour sessions Duration: 8 weeks Practitioner: Health psychologist Mindfulness-Based Cognitive Therapy (MBCT) includes most of the mindfulness-based stress reduction (MBSR) syllabus with additional cognitive therapy exercises. Cognitive exercises were adapted so that instead of exploring how thoughts and feelings are linked and how this can lead to low mood, thoughts regarding having MS were discussed and how these thoughts are linked to anxiety and low mood.

	The eight chapters, one for each session, introduced key mindfulness concepts, addressed issues common to progressive MS, and described homework for the week ahead. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable Standard NHS care. No additional treatment
Duration of follow-up	3-months
Sources of funding	Not industry funded
Sample size	N=40 Mindfulness: n=19 Waitlist control: n=21

RCT: randomised controlled trial; MBCT: mindfulness-based cognitive therapy; MBSR: mindfulness-based stress reduction; N/n: number of participants; NHS: national health service; PPMS: primary progressive multiple sclerosis; SD: standard deviation; SPMS: secondary progressive multiple sclerosis

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)
- 3 months post intervention

Mindfulness versus waitlist control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by EQ-5D - Polarity - Higher values are better

Mood as measured by HADS-A - Polarity - Lower values are better

Mood as measured by HADS-D - Polarity - Lower values are better

Mood as measured by GHQ Distress - Polarity - Lower values are better

Outcome	Mindfulness, post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=17	Mindfulness, 3-months post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=15	Waitlist control, post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=19	Waitlist control, 3-months post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=18
EQ-5D change in score from baseline Mean (SD)	0.023 (0.27)	0.1 (0.27)	0.04 (0.2)	0.02 (0.2)
HADS-A change in score from baseline	-3.85 (4.4)	-4.32 (4.49)	0.11 (3.4)	0.81 (4.54)

Outcome	Mindfulness, post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=17	Mindfulness, 3-months post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=15	Waitlist control, post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=19	Waitlist control, 3-months post-intervention, EQ-5D N =16; HADS-A/HADS-D/GHQ N=18
Mean (SD)				
HADS-D change in score from baseline Mean (SD)	-1.12 (3.39)	-1.11 (2.84)	0.43 (2.38)	0.08 (2.1)
GHQ-Distress change in score from baseline Mean (SD)	-4.67 (4.3)	-6.17 (4.3)	-2.42 (3.57)	-2.12 (3)

EQ-5D: euroqol-5 dimension; GHQ-Distress: general health questionnaire-distress; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; N/n: number of participants; SD: standard deviation

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Randomisation using fixed block sizes of two and pre-randomisation allocation concealment preserved, no further information on randomisation process or allocation concealment. Intervention group had fewer people with PPMS than the control group, no other significant differences in baseline characteristics.)*

Section	Question	Answer
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: Impact on GHQ; HADS; EQ-5D. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available. All analyses reported in the study.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

EQ-5D: euroqol-5 dimension; GHQ-Distress: general health questionnaire-distress; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; ITT: intention-to-treat analysis; PPMS: primary progressive multiple sclerosis

2 **Bogosian, 2022**

Bibliographic Reference	Bogosian, Angeliki; Hurt, Catherine S; Hindle, John V; McCracken, Lance M; Vasconcelos E Sa, Debora A; Axell, Sandra; Tapper, Katy; Stevens, Jemima; Hirani, P Shashi; Salhab, Marya; Ye, Wenrong; Cubi-Molla, Patricia; Acceptability and Feasibility of a Mindfulness Intervention Delivered via Videoconferencing for People With Parkinson's.; Journal of geriatric psychiatry and neurology; 2022; vol. 35 (no. 1); 155-167

3 **Study details**

Country/ies where study was carried out	UK
Study type	Randomised controlled trial (RCT)
Study dates	February - March 2016
Inclusion criteria	- Self-reported diagnosis of Parkinson’s disease by a neurologist or geriatrician, - Computer and internet access at home, - Able to communicate in English fluently, - Stabilized on Parkinson’s medication, antidepressants or anxiolytics (if taken), indicated by a stable dose for a minimum of 1 month
Exclusion criteria	- Self-reported a severe cognitive impairment that would make participation in the mindfulness sessions and home practice of mindful meditation problematic or distressing, - Any severe psychiatric conditions (such as psychosis, drug/alcohol abuse) that could potentially risk failure in the intervention or limit participation in the course, - Severe hearing impairment,

	- Participating in other psychological therapies at the time or had prior formal training in mindfulness methods or a current meditation practice
Patient characteristics	N= 60 adults with Parkinson's disease - Mindfulness: n=30 - Waitlist control: n=30 Age in years [Mean (SD)]: - Mindfulness: 59.50 (11.12) - Waitlist control: 62.23 (8.96) Sex (M/F): - Mindfulness: n=17/n=13 - Waitlist control: n=13/n=17 Time since diagnosis in years [Mean (SD)]: - Mindfulness: 5.22 (3.55) - Waitlist control: 3.43 (3.85) Chronic Neurological Disorder Category: Progressive neurological diseases
Intervention(s)/control	**Intervention** Name: Mindfulness Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Videoconference through Skype, in groups of 5 people Number/frequency of sessions: 8x1-hour sessions

	Duration: 8 weeks Practitioner: Health psychologist Each session contained all the elements of the sessions of the original protocol, for example acceptance, relating to thoughts and self-compassion. All sessions started with a 10-minute meditation practice, followed by a 10-minute inquiry. Then another short meditation practice followed this discussion, concluding with a homework assignment for the next week. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable Standard NHS care. No additional treatment
Duration of follow-up	20-weeks
Sources of funding	Not industry funded
Sample size	N=60 - Mindfulness: n=30 - Waitlist control: n=30
Other information	No confidence intervals around EQ-5D-3L outcomes therefore not extracted.

EQ-5D: euroqol 5-dimension 3-level; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)
- 20 weeks post intervention

Mindfulness versus waitlist control: mood, pain

Mood as measured by HADS-A - Polarity - Lower values are better
Mood as measured by HADS-D - Polarity - Lower values are better
Pain as measured by BPI - Polarity - Lower values are better

Outcome	Mindfulness, post-intervention, N=30	Mindfulness, 20-weeks post-intervention, N=30	Waitlist control, post-intervention, N=30	Waitlist control, 20-weeks post-intervention, N=30
HADS-A change in score from baseline Mean (SD)	-1.43 (3.3)	-1.73 (3.08)	-1.33 (2.35)	-1.56 (2.4)
HADS-D change in score from baseline Mean (SD)	-0.96 (2.6)	-1.2 (2.76)	-0.6 (2.76)	-0.4 (1.9)
BPI change in score from baseline	-0.23 (1.46)	0.18 (1.49)	0.15 (2)	0.19 (1.54)

Outcome	Mindfulness, post-intervention, N=30	Mindfulness, 20-weeks post-intervention, N=30	Waitlist control, post-intervention, N=30	Waitlist control, 20-weeks post-intervention, N=30
Mean (SD)				

BPI: brief pain inventory; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale–depression; N/n: number of participants; SD: standard deviation

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-generated randomly permuted blocks scheme and concealed allocation. No differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All randomised participants analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: HADS; BPI. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns

Section	Question	Answer
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

BPI: brief pain inventory; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression Scale–depression; ITT: intention-to-treat

Brown, 2014

Bibliographic Reference	Brown, Felicity L; Whittingham, Koa; Boyd, Roslyn N; McKinlay, Lynne; Sofronoff, Kate; Improving child and parenting outcomes following paediatric acquired brain injury: a randomised controlled trial of Stepping Stones Triple P plus Acceptance and Commitment Therapy.; Journal of child psychology and psychiatry, and allied disciplines; 2014; vol. 55 (no. 10); 1172-83

Study details

Country/ies where study was carried out	Australia
Study type	Randomised controlled trial (RCT)
Study dates	October 2010 - May 2012
Inclusion criteria	- Parents or kinship carers of a child with a diagnosis of acquired brain injury (ABI), aged 2 to 12 years, - Child was at least 3 months postinjury/diagnosis, - Child was currently evidencing at least one mild behavioural or emotional difficulty, according to subjective opinion of the parent
Exclusion criteria	- Child was acutely medically unwell or undergoing chemotherapy or radiation therapy,

	- Insufficient English proficiency to participate in the group programme.
Patient characteristics	N=59 families of children with acquired brain injury - Stepping Stones Triple P plus Acceptance and Commitment Therapy (SSTP + ACT): n=30 - Care as usual: n=29 Age in years [Mean (SD)]: - SSTP + ACT: 7.13 (3.17) - Care as usual: 6.87 (3.03) Sex (M/F): -SSTP + ACT: n=17/n=13 - Care as usual: n=18/n=11 Time since diagnosis in years [Mean (SD)]: - SSTP + ACT: 3.13 (2.62) - Care as usual: 3.63 (2.52) Chronic Neurological Disorder Category: Acquired Brain Injury
Intervention(s)/control	**Intervention** Name: Stepping Stones Triple P (SSTP) plus Acceptance and Commitment Therapy (ACT) Protocol intervention group: Interventions to improve relationships Delivery setting: Not reported Number/frequency of sessions: 2-sessions ACT and 9-sessions SSTP. 8xgroup sessions (16 hours; 2 ACT ses-sions, 6 SSTP ses-sions) and 3xindividual SSTP telephone ses-sions (1.5 hours).

	Duration: 10-weeks Practitioner: Clinical psychologist Breaks were scheduled around school holidays where necessary and make-up sessions were offered when parents missed group sessions. Group sizes ranged from 3-6 families. Parents were asked to report if they received any additional support relating to parenting during the care as usual or treatment periods. **Control** Name: Care as usual Protocol description: Control (usual care) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable Continued to re-ceive any concomi-tant care they were already receiving, with no additional treatment. Families allocated to the care as usual condition received the intervention at the end of the treatment period.
Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	N=59; SSTP + ACT: n=30 Care as usual: n=29

1

N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation; SSTP + ACT: stepping stones triple p plus acceptance and commitment therapy

Outcomes

Study timepoints

- Baseline
- Post intervention (10 weeks from baseline)

SSTP + ACT versus control: behaviour change

Behaviour as measured by ECBI Intensity - Polarity - Lower values are better

Behaviour as measured by ECBI Problem - Polarity - Lower values are better

Behaviour as measured by SDQ Emotional - Polarity - Lower values are better

Outcome	SSTP + ACT, post-intervention N = 25	Care as usual, post-intervention, N = 27
ECBI Intensity change in score from baseline Mean (SD)	-28.07 (24)	2.34 (22.15)
ECBI Problem change in score from baseline Mean (SD)	-7.46 (5.84)	-1.01 (5.86)
SDQ Emotional change in score from baseline Mean (SD)	-1.72 (1.64)	-0.31 (1.52)

ECBI: Eyberg child behaviour inventory; N/n: number of participants; SDQ: strengths and difficulty questionnaire; SD: standard deviation; SSTP + ACT: stepping stones triple p plus acceptance and commitment therapy

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2

3 **Critical appraisal - Cochrane RoB 2**

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Randomisation was via computer-generated random number sequence, with allocations placed in concealed envelopes. Baseline differences in parent-reported learning difficulties, parent relationship status, and parent employment status, follow-up nonparametric tests indicated that these demographic variables were unrelated to primary outcomes.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Some concerns *(No information on blinding of participants, carer or personnel, however due to nature of intervention most likely not possible. No information if ITT performed.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Some concerns *(36% and 41% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results were biased by missing data; loss to follow-up balanced between groups so missingness unlikely depended on true value.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: ECBI, SDQ. Standardised and validated measurement tools implemented by researchers who may not have been blinded to allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*

Section	Question	Answer
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

ECBI: Eyberg child behaviour inventory; ITT: intention-to-treat; SDQ: strengths and difficulty questionnaire

Cavalera, 2019

Bibliographic Reference	Cavalera, Cesare; Rovaris, Marco; Mendozzi, Laura; Pugnetti, Luigi; Garegnani, Massimo; Castelnuovo, Gianluca; Molinari, Enrico; Pagnini, Francesco; Online meditation training for people with multiple sclerosis: A randomized controlled trial.; Multiple sclerosis (Houndmills, Basingstoke, England); 2019; vol. 25 (no. 4); 610-617

Study details

Country/ies where study was carried out	Italy
Study type	Randomised controlled trial (RCT)
Study dates	Not reported
Inclusion criteria	- Diagnosis of relapsing–remitting or secondary progressive multiple sclerosis, as determined by a specialized neurologist; - Ability to communicate and to understand tasks as assessed by treating physician; - No change in disease-modifying treatment in the 3 months before the enrolment;

	- No clinical relapses or use of steroid treatment during the 4 weeks before the enrolment; - Availability of a personal computer, smartphone, or tablet; - Provided informed consent for study participation; and age 18 years or older.
Exclusion criteria	- Severe co-morbidity that would reduce life expectancy to less than 1 year (for example, oncological or severe cardiac issues); - Severe neuropsychological impairment (such as dementia), as indicated by testing below the fifth percentile in at least three of six dimensions of neuropsychological functioning tests (for example, attention and concentration, processing speed, executive function, verbal memory, and verbal processing), - Psychosis or dissociative disorders; - Pregnancy.
Patient characteristics	N=121 adults with multiple sclerosis - Online mindfulness: n=54 - Online psychoeducation: n=67 Age in years [Mean (SD)]: - Online mindfulness meditation: 42.26 (8.35) - Online psychoeducation: 43.19 (9.02) Sex (M/F): - Online mindfulness meditation: n=18/n=36 - Online psychoeducation: n=25/n=42 Time since diagnosis in years [Mean (SD)]:

	- Online mindfulness meditation: 11.19 (8.0) - Online psychoeducation: 12.21 (7.29) Chronic Neurological Disorder Category: Progressive neurological diseases
Intervention(s)/control	**Intervention** Name: Online mindfulness meditation Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Online and skype group videochat Number/frequency of sessions: weekly Duration: 8 weeks Practitioner: Expert MBSR trainer. The course followed the original MBSR structure, adapted to accommodate MS clinical features. For example, music meditations and discussions about symptoms acceptance were introduced. Furthermore, home exercises were facilitated by online multimedia contents instead of physical CDs. A dedicated website (www.sclerosimultiplaconsapevole.it) was created to facilitate content sharing among each group member. **Control** Name: Online psychoeducation Protocol description: Control Delivery setting: online Number/frequency of sessions: Weekly sessions with videos and home exercises Duration: 8 weeks

	Practitioner: Not applicable Online psychoeducation was set out as an active control comparator. Course materials were developed using existing Italian MS Association informative videos; recording new interviews; and generating new exercises. Content dealt with stress management, relaxation training, sleep hygiene, fatigue, and social relationships. The requested time commitment was estimated to be similar to the online MBSR course.
Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	N=121 - Online mindfulness meditation: n=54 - Online psychoeducation: n=67

MBSR: mindfulness-based stress reduction; MS: multiple sclerosis; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)
- 6 months post intervention

Online mindfulness meditation versus online psychoeducation: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by MSQoL-54 - Polarity - Lower values are better

Mood as measured by HADS-A - Polarity - Lower values are better

Mood as measured by HADS-D - Polarity - Lower values are better

Outcome	Online mindfulness meditation versus online psychoeducation, post-intervention, N=54	Online mindfulness meditation versus online psychoeducation, 6-months post-intervention, N=67
MSQOL-54 F-statistic between group effect (p-value)	4.68 (0.033[1])	0.018 (0.894)
HADS-A F-statistic between group effect (p-value)	3.96 (0.049[1])	1.033 (0.312)
HADS-D F-statistic between group effect (p-value)	5.56 (0.02[1])	0.169 (0.682)

HADS-A: hospital anxiety and depression scale - anxiety; HADS-D: hospital anxiety and depression scale - depression; MSQOL-54: multiple sclerosis quality of life-54 questionnaire; N/n: number of participants
[1]Statistically significant benefit favouring online mindfulness meditation

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(No information on randomisation process or allocation concealment. Baseline characteristics balanced at baseline.)*

Section	Question	Answer
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: MSQOL-54; HADS. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Some concerns *(Published protocol available. Mean differences between intervention and control reported in graphical format, no raw data presented.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

HADS: hospital anxiety and depression scale; ITT: intention-to-treat; MSQOL-54: multiple sclerosis quality of life-54 questionnaire

Giovannetti, 2020

Bibliographic Reference	Giovannetti, Ambra Mara; Quintas, Rui; Tramacere, Irene; Giordano, Andrea; Confalonieri, Paolo; Messmer Uccelli, Michele; Solari, Alessandra; Pakenham, Kenneth Ian; A resilience group training program for people with multiple sclerosis: Results of a pilot single-blind randomized controlled trial and nested qualitative study.; PloS one; 2020; vol. 15 (no. 4); e0231380

1 **Study details**

Country/ies where study was carried out	Italy
Study type	Randomised controlled trial (RCT)
Study dates	April 2017-January 2018
Inclusion criteria	- Diagnosis of multiple sclerosis, - Age >18 years, - Resilience score <83, - Able to attend intervention group sessions, - Fluent Italian speaker.
Exclusion criteria	- Severe cognitive compromise (Mini Mental State Examination <19), - Ongoing psychotherapy in the preceding six months, - Ongoing practice in meditation or other mind-body therapies, - Major psychiatric disorders (including psychotic disorders or active substance abuse problems), - Pregnancy, - Multiple sclerosis diagnosis for less than three months, - One or more relapses in the last month.

Patient characteristics	N=37 adults with multiple sclerosis - Resilience group training (READY): n=18 - Relaxation: n=19 Age in years [Mean (SD)] - READY: 44.8 (10.1) - Relaxation: 46.53 (8.3) Sex (M/F): - READY: n=5/n=13 - Relaxation: n=10/n=9 Time since diagnosis in years [Mean (SD)]: - READY: 13.7 (12.4) - Relaxation: 10.7 (8.9) Chronic Neurological Disorder Category: Progressive neurological diseases
Intervention(s)/control	**Intervention** Name: REsilience and Activities for every DaY (READY) Protocol intervention group: Interventions for adjustment and engagement Delivery setting: In-person group Number/frequency of sessions: 7x2.5 hour weekly sessions + 1x2.5 hour "booster" session 5 weeks after the 7th session over 12 weeks Duration: 12 weeks

	Practitioner: Psychologist Incorporation of psychoeducation and experiential exercises, combined with readings and homework exercises that participants are encouraged to practice between sessions Content of the seven weekly sessions: Introduction to the READY Resilience Model, five modules focusing on each of the 6 ACT processes (Mindfulness, Acceptance, Cognitive Defusion, Self-as-Context, Values and Meaningful Action), and a review module (Review and Future Planning). The booster session provides a review of the program content. **Control** Name: Group relaxation programme Protocol description: Control Delivery setting: In-person Number/frequency of sessions: 7 weekly 1-hour sessions + "booster" session after 5 weeks Duration: 12 weeks Practitioner: Psychologist Group relaxation program was set out as an active control comparator. The control matched the intervention in number of sessions and schedule (but not in session content and length) to control for the non-specific effects of READY. The program had a facilitator manual, participant workbook, and audio recordings of relaxation exercises.
Duration of follow-up	24-weeks
Sources of funding	Not industry funded
Sample size	N=37 - READY: n=18

	- Relaxation: n=19

N/n: number of participants; READY: resilience and activities for every day; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (12 weeks from baseline)
- 3 months post intervention

READY versus Relaxation: physical and mental health related quality of life and social care related quality of life, mood, coping and adjustment

Physical and mental health related quality of life and social care related quality of life as measured by MSQOL-54 - Polarity - Lower values are better

Mood as measured by HADS-A - Polarity - Lower values are better

Mood as measured by HADS-D - Polarity - Lower values are better

Coping and adjustment as measured by CD-RISC 25 - Polarity - Higher values are better

Outcome	READY, post-intervention, N = 18	READY, 3-months post-intervention, N = 18	Relaxation, post-intervention, N = 19	Relaxation, 3-months post-intervention, N = 19
MSQOL-54 change in score from baseline Mean (SD)	6.4 (12.62)	9.2 (12.62)	0 (10.5)	9.9 (11.25)

Outcome	READY, post-intervention, N = 18	READY, 3-months post-intervention, N = 18	Relaxation, post-intervention, N = 19	Relaxation, 3-months post-intervention, N = 19
HADS-A change in score from baseline Mean (SD)	-3.2 (2.36)	-1.2 (3.26)	-1.25 (3.26)	-1.93 (2.65)
HADS-D change in score from baseline Mean (SD)	-1.7 (2.62)	-1.9 (2.62)	-0.2 (2.37)	-1.2 (2.37)
CD-RISC 25 post-intervention change in score from baseline Mean (SD)	10.8 (12.41)	15.6 (11.11)	5 (10.96)	5.2 (9.53)

CD-RISC 25: Connor-Davidson resilience scale; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; MSQOL-54: multiple sclerosis quality of life-54 questionnaire; N/n: number of participants; READY: resilience and activities for every day

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-based stratified randomization and no details on allocation concealment. Higher MSQOL-54 mean score in the intervention arm ($p < 0.05$) at baseline, no other significant differences in baseline characteristics.)*

Section	Question	Answer
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: MS-QOL-54; HADS, CD RISC 25. Standardised and validated measurement tools implemented by researchers blinded to allocation, however, outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

1 *CD-RISC 25: Connor-Davidson resilience scale; HADS-A: hospital anxiety and depression scale; MSQOL-54: multiple sclerosis quality of life-54 questionnaire*

2

3 **Goldstein, 2021**

Bibliographic Reference	Goldstein, Laura H; Robinson, Emily J; Pilecka, Izabela; Perdue, Iain; Mosweu, Iris; Read, Julie; Jordan, Harriet; Wilkinson, Matthew; Rawlings, Gregg; Feehan, Sarah J; Callaghan, Hannah; Day, Elana; Purnell, James; Baldellou Lopez, Maria;

Brockington, Alice; Burness, Christine; Poole, Norman A; Eastwood, Carole; Moore, Michele; Mellers, John Dc; Stone, Jon; Carson, Alan; Medford, Nick; Reuber, Markus; McCrone, Paul; Murray, Joanna; Richardson, Mark P; Landau, Sabine; Chalder, Trudie; Cognitive-behavioural therapy compared with standardised medical care for adults with dissociative non-epileptic seizures: the CODES RCT.; Health technology assessment (Winchester, England); 2021; vol. 25 (no. 43); 1-144

1 **Study details**

Country/ies where study was carried out	UK
Study type	Randomised controlled trial (RCT)
Study dates	October 2014-February 2017
Inclusion criteria	- Aged ≥ 18 years recruited into the study in the screening stage and willing to continue completing seizure diaries and questionnaires, - Provided data about their seizure occurrence on a regular basis in the screening phase, - Willing to attend weekly or fortnightly cognitive–behavioural therapy sessions if randomised to cognitive–behavioural therapy, - The patient and their clinician considered randomisation to be acceptable in this case, - Written informed consent.
Exclusion criteria	- Experiencing epileptic seizures plus dissociative seizures, - No dissociative seizure occurrence in the 8 weeks preceding the psychiatry assessment, - Previously received cognitive–behavioural therapy for dissociative seizures at one of the centres participating in the randomised controlled trial, - Receiving cognitive–behavioural therapy for another disorder, - Active psychosis,

	- Met the criteria for current alcohol or drug dependence according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, - Currently using benzodiazepines > equivalent daily dose of 10 mg of diazepam, - High risk of imminent self-harm following the psychiatry assessment or following the structured psychiatric assessment administered by the research worker, followed up by a discussion with the patient's psychiatrist, - Already had a diagnosis of factitious disorder.
Patient characteristics	N=368 adults with dissociative non-epileptic seizures - CBT + standard care: n=186 - Standard care: n=182 Age in years [Mean (SD)]: - CBT + standard care: 37.7 (14.5) - Standard care: 37.3 (14.2) Sex (M/F): - CBT + standard care: n=46/n=140 - Standard care: male, n=56/n=126 Time since diagnosis in months [Mean (SD)]: - CBT + standard care: 5.9 (7.8) - Standard care: 6.5 (9.7) Chronic Neurological Disorder Category: Progressive neurological diseases

Intervention(s)/control	**Intervention** Name: CBT + standard care Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Outpatient service at clinical centres Number/frequency of sessions: 12xsessions plus 1 "booster" session Duration: Delivered over 4-5 months with the "booster" session at 9 months post-randomisation Practitioner: CBT Therapist Cognitive–behavioural model incorporated the fear escape–avoidance model. Key interventions: Gaining understanding of difficulties (ABC of seizures); individual formulation including stress/trauma; self-monitoring of seizures and cognitive/behavioural responses; goal-setting; distraction and refocusing techniques (specifically interrupting seizure); graded exposure; addressing unhelpful beliefs through cognitive techniques; discussing previous trauma and the role it may have played in seizure development; stress management; problem-solving. **Control** Name: Standard care Protocol description: Control (standard care) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable Standard care included providing briefing sessions to the clinicians, a detailed leaflet about how they might explain the diagnosis to patients, crib sheets containing the essential information that they should provide to patients during sessions and sets of frequently asked questions for clinicians providing

	standard care. One important component of standard care was the provision of information. Two information booklets about dissociative seizures were provided to supplement the information given to patients by their medical clinicians.
Duration of follow-up	12-months
Sources of funding	Not industry funded
Sample size	N=368 - CBT + standard care: n=186 - Standard care: n=182

CBT: cognitive behavioural therapy; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- 12 months post randomisation

CBT + standard care versus standard care: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by EQ-5D-5L - Polarity - Higher values are better

Mood as measured by GAD-7 - Polarity - Lower values are better

Mood as measured by PHQ-9 - Polarity - Lower values are better

Mood as measured by Distress CORE-10 - Polarity - Lower values are better

Outcome	CBT + standard care versus standard care, 12-months post-randomisation, N=186 vs 182
EQ-5D-5L multivariate imputation via chained equations Standardised Mean Difference (95% CI)	0.27 (0.06 to 0.47)
GAD-7 multivariate imputation via chained equations Standardised Mean Difference (95% CI)	-0.18 (-0.37 to 0.01)
PHQ-9 multivariate imputation via chained equations Standardised Mean Difference (95% CI)	-0.17 (-0.37 to 0.03)
Distress CORE 10 multivariate imputation via chained equations Standardised Mean Difference (95% CI)	-0.25 (-0.45 to -0.05)

CBT: cognitive behavioural therapy; CI: confidence interval; Distress CORE-10: distress clinical outcomes in routine evaluation-10; EQ-5D-5L: EuroQol-5 dimension-5 level: GAD-7: generalised anxiety disorder-7; N/n: number of participants; PHQ-9: patient health questionnaire-9

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Online randomisation system at clinical trials unit and allocation concealment. No significant differences in baseline characteristics.)*

Section	Question	Answer
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Some concerns *(Participants and personnel were aware of interventions allocated, there was no information whether physicians administered additional interventions in the control arm such as pharmacological interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: EQ-5D-5L; GAD-7; PHQ-9; Distress CORE-10. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

Distress CORE-10: distress clinical outcomes in routine evaluation-10; EQ-5D: euroQqol-5 dimension; GAD-7: generalised anxiety disorder-7; ITT: intention-to-treat; PHQ-9: patient health questionnaire

Graziano, 2014

Bibliographic Reference	Graziano, Federica; Calandri, Emanuela; Borghi, Martina; Bonino, Silvia; The effects of a group-based cognitive behavioral therapy on people with multiple sclerosis: a randomized controlled trial.; Clinical rehabilitation; 2014; vol. 28 (no. 3); 264-74

1 **Study details**

Country/ies where study was carried out	Italy
Study type	Randomised controlled trial (RCT)
Study dates	Not reported
Inclusion criteria	- Confirmed diagnosis of multiple sclerosis; - Aged between 20 and 65 years; - Expanded Disability Status Scale score of between 1.0 (no disability) and 5.5 (limitations in daily activities, able to walk 100 meters without aid or rest) representing patients with mild to moderate levels of disability range 1-10); - Absence of clinically significant cognitive deficits; - Absence of severe psychiatric deficits; - Absence of significant relational difficulties
Exclusion criteria	Not reported
Patient characteristics	N=144 adults with multiple sclerosis - CBT: n=71 - Informative sessions: n=73 Age in years [Mean (SD)]:

	- CBT: 42.3 (8.5) - Informative sessions: 38.3 (10.1) Sex (M/F): - CBT: n=14/n=27 - Informative sessions: n=17/n=24 Time since diagnosis in years [Mean (SD)]: - CBT: 8.6 (5.2) - Informative sessions: 7.2 (5.3) Chronic Neurological Disorder Category: Progressive Neurological Diseases
Intervention(s)/control	**Intervention** Name: Cognitive Behavioural Group-based Intervention Protocol intervention group: Interventions for adjustment and engagement Delivery setting: In-person, non-medical setting Number/frequency of sessions: 4x2-hour sessions over 2 months and fifth follow-up session after 6 months Duration: 6 months Practitioner: Psychologist Intervention group was divided into six sub-groups based on age (20-35, 36-50, and 51-65 years old), because the developmental tasks and challenges are different for people in different periods of their life span'. The topics of the four sessions were as follows:

	Session 1: identity change and redefinition following the diagnosis of multiple sclerosis. Session 2: life goals. Session 3: strategies to reach goals and behavior evaluation; the promotion of self-efficacy over symptoms, specifically, fatigue. Session 4: management of negative emotions related to the illness; positive, negative, and illusory thinking related to the illness; effective communication and the ability to ask for help. Participants were also asked to do relaxation exercises at home every day. **Control** Name: Informative sessions Protocol description: Control Delivery setting: In-person, non-medical setting Number/frequency of sessions: 3 group informative sessions Duration: 6 months Practitioner: Various therapists Informative sessions were set out as an active control comparator. Content related to stem cells, complementary and alternative therapies, and nourishment, respectively.
Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	N=114 - CBT: n= 71

	- Control: n= 73

CBT: cognitive behaviour therapy; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (6 months from baseline)
- 6 months post intervention

CBT versus control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by MSQoL-54 - Polarity - Higher values are better

Mood as measured by CES-D - Polarity - Lower values are better

Mood as measured by PANAS - Polarity - Higher values are better

Outcome	CBT, post-intervention, MSQOL-54 N= 36, CES-D N= 36, PANAS N=36	CBT, 6-months post-intervention, MSQOL-54 N= 27, CES-D N= 27, PANAS N=34	Informative sessions, post-intervention, MSQOL-54 N= 34, CES-D N= 34, PANAS N=27	Informative sessions, 6-months post-intervention, MSQOL-54 N= 38, CES-D N= 38, PANAS N=38
MSQOL-54 change in score from baseline Mean (SD)	0.85 (2.92)	1.57 (3.07)	1.28 (2.75)	-0.48 (3.25)

Outcome	CBT, post-intervention, MSQOL-54 N= 36, CES-D N= 36, PANAS N=36	CBT, 6-months post-intervention, MSQOL-54 N= 27, CES-D N= 27, PANAS N=34	Informative sessions, post-intervention, MSQOL-54 N= 34, CES-D N= 34, PANAS N=27	Informative sessions, 6-months post-intervention, MSQOL-54 N= 38, CES-D N= 38, PANAS N=38
CES-D change in score from baseline Mean (SD)	-1.93 (6.04)	-2.37 (5.81)	-2.99 (8.95)	0.66 (11.08)
PANAS change in score from baseline Mean (SD)	1.1 (6.84)	2.74 (7.36)	3.52 (10.73)	1.78 (11.09)

CES-D: Centre for Epidemiologic Studies depression scale; MSQOL-54: Multiple sclerosis quality of life-54 questionnaire; N/n: number of participants; PANAS: positive affect negative affect schedule; SD: standard deviation

Critical appraisal Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(No information provided on randomisation or allocation concealment. No significant differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended	Risk of bias for deviations from the intended interventions	Some concerns *(Although participants and personnel were aware of interventions allocated,*

Section	Question	Answer
interventions (effect of assignment to intervention)	(effect of assignment to intervention)	*there were no deviations from intended interventions. No information if ITT performed.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	High *(33% and 7% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results were biased by missing data; loss to follow-up not balanced between groups so missingness may depend on true value.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: MS-QoL 54, PANAS, CES-D. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Some concerns *(No details of published protocol.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

CES-D: Centre for Epidemiologic Studies depression scale; ITT: intention-to-treat; MSQOL-54: multiple sclerosis quality of life-54 questionnaire; PANAS: positive affect negative affect schedule

2 **Impellizzeri, 2020**

Bibliographic Reference	Impellizzeri, Federica; Leonardi, Simona; Latella, Desiree; Maggio, Maria Grazia; Foti Cuzzola, Marilena; Russo, Margherita; Sessa, Edoardo; Bramanti, Placido; De Luca, Rosaria; Calabro, Rocco Salvatore; An integrative cognitive rehabilitation using neurologic music therapy in multiple sclerosis: A pilot study.; Medicine; 2020; vol. 99 (no. 4); e18866

3 **Study details**

Country/ies where study was carried out	Italy
Study type	Randomised controlled trial (RCT)
Study dates	November 2017 - December 2018
Inclusion criteria	- Multiple sclerosis diagnosis according to Lublin criteria; - An Expanded Disability Status Scale between 3 and 7; - To love/enjoy music, either performed instrumentally or listened; - Absence of disabling sensory alterations (for example, hearing and visual loss); - Absence of severe medical and psychiatric illness according to the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition and International Classification of Diseases
Exclusion criteria	Not reported
Patient characteristics	N=30 adults with multiple sclerosis - Neurologic Music Therapy (NMT) + Conventional Cognitive Rehabilitation (CCR): n=15 - Conventional Cognitive Rehabilitation (CCR): n=15 Age in years [Mean (SD)]:

	- NMT + CCR: 51.73 (10.15) - CCR: 51.33 (7.61) Sex (M/F): - NMT + CCR: n=9/n=6 - CCR: n=10/n=5 Time since diagnosis in years [Mean (SD)]: - NMT + CCR: 9 (2) - CCR: 10 (3) Chronic Neurological Disorder Category: Progressive neurological diseases
Intervention(s)/control	**Intervention** Name: Neurologic Music Therapy (NMT) + Conventional Cognitive Rehabilitation (CCR) Protocol intervention group: Creative Therapies Delivery setting: In-person Number/frequency of sessions: 3x1-hour CCR ses-sions a week (total 24 sessions) + 3xNMT sessions week (total 24 sessions) Duration: 8 weeks Practitioner: Neuropsychologist + music therapist 2 NMT techniques: the Associative Mood and Memory Training (AMMT) and the Music in Psychosocial Training and Counseling (MPC). AMMT involves music to induce a specific mood state that is associated with material stored in long-term memory, specifically autobiographical memories that belong to the self and one’s past experiences. Through dedicated music listening or singing, the patient experiences a shift

	of mood, or intensification in their current mood, that activates an associative memory network, creating access to memories of information or events from the past. The primary goals of MPC include emotion identification and expression, mood control, social competence, and self-awareness. These goals are stimulated through guided music listening, musical role-playing, expressive improvisation or singing, and composition exercises. CCR focused on 4 different domains: memory abilities; social skills; mood and motivation; and emotional awareness. CCR in the intervention differed to control in terms of time commitment. However, the combination of CCR + NMT in the intervention group equated to same treatment time as CCR in the control group. **Control** Name: Conventional Cognitive Rehabilitation (CCR) Protocol description: Control Delivery setting: In-person Number/frequency of sessions: 1-hour CCR 6x per week Duration: 8 weeks Practitioner: Neuropsychologist CCR focused on 4 different domains: memory abilities; social skills; mood and motivation; and emotional awareness.
Duration of follow-up	Post-intervention
Sources of funding	Not industry funded
Sample size	N=30: - CCR + NMT: n=15 - CCR: n=15

Other information	CCR differed between 2 groups - 6 times a week in control group and 3 times a week in intervention group

AMMT: associative mood and memory training; CCR: conventional cognitive rehabilitation; MPC: music in psychosocial training and counseling; N/n: number of participants; NMT: neurologic music therapy; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)

CCR + NMT versus CCR: mood

Mood as measured by BDI - Polarity - Lower values are better

Outcome	CCR + NMT, post-intervention, N =15	CCR, post-intervention, N =15
BDI change in score from baseline Mean (95% CI)	-5.6 (-7.72 to -3.47)	0.66 (-0.6 to 1.93)

BDI: Beck depression inventory; CCR: conventional cognitive rehabilitation; CI: confidence interval; N/n: number of participants; NMT: neurologic music therapy

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-generated randomization list assessed by statisticians,*

Section	Question	Answer
		which was blinded to the training allocation. No significant differences in baseline characteristics.)
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. All participants were analysed in the groups they were randomised to.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: BDI. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

1 *BDI: Beck depression inventory*

2 **Kraepelien, 2020**

Bibliographic Reference	Kraepelien, Martin; Schibbye, Robert; Mansson, Kristoffer; Sundstrom, Christopher; Riggare, Sara; Andersson, Gerhard; Lindefors, Nils; Svenningsson, Per; Kaldo, Viktor; Individually Tailored Internet-Based Cognitive-Behavioral Therapy for Daily

Functioning in Patients with Parkinson's Disease: A Randomized Controlled Trial.; Journal of Parkinson's disease; 2020; vol. 10 (no. 2); 653-664

Study details

Country/ies where study was carried out	Sweden
Study type	Randomised controlled trial (RCT)
Study dates	February- April 2016
Inclusion criteria	- Diagnosed Parkinson’s disease, - Significant amount of self-reported problems with general function defined as 18 points or more on the Work and Social Adjustment Scale, - Regular access to at least one internet-enabled computer, tablet or smartphone, and being able to receive text messages.
Exclusion criteria	- Substance or alcohol abuse, - Psychotic disorder, bipolar disorder or other serious psychiatric disorder that could prevent taking part of the intervention, - Practical obstacles that hinders participating in the intervention, such as not having enough time, or having too severe PD symptoms, to be able to actively participate in the study, - High suicide risk, self-rated or based on a standardized clinical interview.
Patient characteristics	N=77 adults with Parkinson’s disease - Individually Tailored Internet-Based Cognitive-Behavioural Therapy (ICBT): n=38

	- Waitlist control: n=39 Age in years [Mean (SD)]: - ICBT: 65.9 (8.5) - Waitlist control: 66.1 (9.8) Sex (M/F): - ICBT: n=12/n=24 - Waitlist control: n=16/n=23 Time since diagnosis in years [Mean (SD)]: - ICBT: 8.3 (4.4) - Waitlist control: 9.6 (5.7) Chronic Neurological Disorder Category: Progressive neurological diseases
Intervention(s)/control	**Intervention** Name: Individually-Tailored Internet-Based Cognitive Behavioural Therapy (ICBT) Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Online Number/frequency of sessions: 1 module per week and 15-minutes per week Q&A with therapist via written messages Duration: 10 week Practitioner: Therapist

	5 compulsory + 5 optional modules. The modules were accessed by the participant one at a time, one module per week. A module consisted of educative texts, interactive forms and a homework exercise. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable Continued to receive any concomitant care they were already receiving, with no additional treatment.
Duration of follow-up	Post-intervention
Sources of funding	Not industry funded
Sample size	N=77 - ICBT: n=38 - Waitlist control: n=39

ICBT: individually-tailored internet-based cognitive behavioural therapy; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (10 weeks from baseline)

ICBT versus control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by PDQ-8 - Polarity - Lower values are better

Mood as measured by HADS-A - Polarity - Lower values are better

Mood as measured by HADS-D - Polarity - Lower values are better

Mood as measured by WSAS – Polarity – Lower values are better

Outcome	ICBT, post-intervention, N =38	Waitlist control, post-intervention, N =39
PDQ-8 change in score from baseline Mean (SD)	-5.08 (7.8)	1.58 (7.82)
HADS-A change in score from baseline Mean (SD)	-0.92 (2.57)	1.2 (0.37)
HADS-D change in score from baseline Mean (SD)	-0.98 (2.35)	0.54 (2.34)

Outcome	ICBT, post-intervention, N =38	Waitlist control, post-intervention, N =39
WSAS change in score from baseline Mean (SD)	-1.44 (4.62)	1.2 (4.64)

CI: confidence interval; ICBT: individually-tailored internet-based cognitive behavioural therapy; HADS-A:hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale -depression; N/n: number of participants; PDQ-8: Parkinson's disease questionnaire-8; WSAS: work and social adjustment scale

Critical appraisal Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Random allocation was done by an independent research nurse using sequentially numbered, sealed envelopes.* *No significant differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions.* *ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	High *(*The questionnaires used were all validated and widely used tools: *HADS, PDQ-8.* Standardised and validated measurement tools implemented by researchers aware of allocation.*)*

Section	Question	Answer
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

HADS: hospital anxiety and depression scale; ITT: intention-to-treat; PDQ-8: Parkinson's disease questionnaire-8

Morrow, 2021

Bibliographic Reference	Morrow, Sarah A; Riccio, Patricia; Vording, Nancy; Rosehart, Heather; Casserly, Courtney; MacDougall, Arlene; A mindfulness group intervention in newly diagnosed persons with multiple sclerosis: A pilot study.; Multiple sclerosis and related disorders; 2021; vol. 52; 103016

Study details

Country/ies where study was carried out	Canada
Study type	Randomised controlled trial (RCT)
Study dates	September 2018 - April 2019
Inclusion criteria	- 18-59 years old,

	- Confirmed diagnosis of relapsing MS (RMS), within one year of an RMS diagnosis at the time of the first mindfulness session, - Fluent in English
Exclusion criteria	- Major psychiatric disease such as bipolar disorder, schizophrenia or untreated severe major depressive disorder, - Substance abuse disorder, including the use of marijuana more than three times per week, - Another neurological disorder that would prevent participation in the intervention, - Unable to attend ≥ 80% (at least 8 of 10) of the MBI sessions
Patient characteristics	N=25 adults with multiple sclerosis - Mindfulness based intervention (MBI): n=16 - Standard care: n=9 Age in years [Mean (SD)]: - MBI: 38.3 (10.0) - Standard care: 35.3 (8.7) Sex (M/F): - MBI: n=2/n=10 - Standard care: n=2/n=7 Time since diagnosis in month [Mean (SD)]: - MBI: 6.4 (6.5) - Standard care: 3.6 (2.8)

	Chronic neurological disorder category: Progressive Neurological Disease
Intervention(s)/control	**Intervention** Name: Mindfulness based intervention Protocol intervention group: Interventions for adjustment and engagement Delivery setting: In-person group Number/frequency of sessions: 1 hour weekly sessions Duration: 10 weeks Practitioner: Registered Nurse Programme with a unique focus (e.g., paying attention; practicing gratitude; noticing emotional triggers; handling conflict; nurturing compassion), facilitated group learning and discussions, and in-session guided mindfulness skills (e.g., mindful breathing, mindful listening, body scan practices). Homework assignment, designed to help reinforce the specific learnings, was assigned at the end of each session. **Control** Name: Standard care Protocol description: Control (standard care) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable As standard of care, after participants were given the diagnosis, the different MS therapies were discussed and information and booklets were given to them to take home. They were re-assessed in 4-8

	weeks for further discussion and initiation of a disease modifying therapy, and follow up occurs at 3, 6 and 12 months after starting medication. They were all advised to call the multiple sclerosis clinic if they experience any new symptoms or concerns.
Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	N=25 - MBI: n=16 - Control: n=9

MBI: mindfulness based interventions; N/n: number of participants; PwMS: people with multiple sclerosis; RCT: randomised controlled trial; RMS: relapsing multiple sclerosis; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (10 weeks from baseline)
- 6 months post intervention

MBI versus control: physical and mental health related quality of life and social care related quality of life, mood, coping and adjustment

Physical and mental health related quality of life and social care related quality of life as measured by SF-36 - Polarity - Lower values are better

Mood as measured by HADS-A - Polarity - Lower values are better

Mood as measured by HADS-D - Polarity - Lower values are better

Coping and adjustment as measured by Brief COPE - Polarity - Higher values are better

Outcome	MBI, post-intervention, N =16	MBI, 6-months post-intervention, N =16	Control, post-intervention, N = 9	Control, post-intervention, N = 9
SF-36 change in score from baseline Mean (SD)	-7.1 (9.4)	-6.7 (11.1)	-1.6 (5.8)	-3.6 (15.5)
HADS-A change in score from baseline Mean (SD)	-1.7 (4.6)	-0.2 (6)	0 (3.4)	-0.3 (3.5)
HADS-D change in score from baseline Mean (SD)	-2.1 (3.3)	-1.8 (3.4)	0.6 (1.6)	0.1 (2.4)
BRIEF-COPE change in score from baseline Mean (SD)	6 (9.7)	-0.1 (7.7)	-4.1 (8.9)	-2.3 (15.9)

BRIEF-COPE: coping orientation to problems experienced inventory; HADS-A: hospital anxiety and depression scale -Anxiety; HADS-D: hospital anxiety and depression scale -depression; MBI: mindfulness based intervention; N/n: number of participants; SD: standard deviation; SF-36: 36-Item short form survey

1

2 **Critical appraisal -Cochrane RoB 2**

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-based random number generator. No details on allocation concealment. Longer time since diagnosis in intervention arm, no other significant differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and MBI facilitator were aware of interventions allocated, there were no deviations from intended interventions. All participants analysed in the groups they were randomised to.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: BRIEF-COPE, HADS, SF-36. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Protocol published available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

3 *BRIEF-COPE: coping orientation to problems experienced inventory; HADS: hospital anxiety and depression scale; SF-36: 36-Item short form survey*

1

2 **Moss-Morris, 2013**

Bibliographic Reference	Moss-Morris, Rona; Dennison, Laura; Landau, Sabine; Yardley, Lucy; Silber, Eli; Chalder, Trudie; A randomized controlled trial of cognitive behavioral therapy (CBT) for adjusting to multiple sclerosis (the saMS trial): does CBT work and for whom does it work?.; Journal of consulting and clinical psychology; 2013; vol. 81 (no. 2); 251-62

3

4 **Study details**

Country/ies where study was carried out	UK
Study type	Randomised controlled trial (RCT)
Study dates	December 2007 - January 2009
Inclusion criteria	- Definite diagnosis of multiple sclerosis within the last 10 years; - Ability to walk a short distance (with a stick or crutches if needed; equivalent to a score of 6.5 or less on the Expanded Disability Status Scale); - Willingness to abstain from new psychological or pharmacological treatment during the study where possible
Exclusion criteria	- Other comorbid serious, life-threatening health problems or severe mental health problems (e.g., psychotic disorders or substance abuse current psychological treatments or treatments received in the last 2 months, and severe cognitive impairment, as assessed by a score of >20 on the Telephone Interview for Cognitive Status Modified); - Participants using disease-modifying drugs (e.g., beta interferon) or antidepressants had to be stabilised on their medication regimes for at least 3 and 2 months, respectively before entering the trial.
Patient characteristics	N=94 adults with multiple sclerosis

	- Cognitive Behavioural Therapy (CBT): n=48 - Supportive listening (SL): n=46 Age in years [Mean (SD)]: - CBT: 40.4 (8.59) - SL: 43.1 (10.49) Sex (M/F): - CBT: n=13/n=35 - SL: n=16/n=30 Time since diagnosis in years [Mean (SD)]: - CBT: 3.6 (2.81) - SL: 4.1 (2.97) Chronic Neurological Disorder Category: Progressive Neurological Diseases
Intervention(s)/control	**Intervention** Name: Cognitive Behavioural Therapy Protocol intervention group: Interventions for adjustment and engagement Delivery setting: 1st and 4th session face-to-face; remaining 6 sessions via telephone Number/frequency of sessions: 8x80-90-minute sessions (first 6 sessions weekly, last 2 sessions fortnightly [50-minutes and 1-hour, respectively]) over 10 weeks. Duration: 10 weeks Practitioner: Nurse-therapist

	The focus of the CBT package was on achieving optimal day-to-day functioning within the constraints of the disease and minimizing distress and managing symptoms where appropriate. The CBT package consisted of nine chapters, with activities and homework sheets, which could be individualized to the needs of the patient. Participants worked with the nurse-therapist to develop a formulation of their particular areas of strengths and difficulties, decided on areas to focus on, and set tasks or homework to do between sessions. **Control** Name: Supportive listening Protocol description: Control Delivery setting: 1st and 4th session face-to-face; remaining 6 sessions via telephone Number/frequency of sessions: 8 sessions (first 6 sessions weekly [80-90 minutes], last 2 sessions fortnightly [50 minutes and 1 hour, respectively]) Duration: 10 weeks Practitioner: Nurse-therapist Participants were given the opportunity to talk freely and confidentially about their experiences, thoughts, and feelings about MS and its effect on their lives. If participants preferred not to focus on their MS, they were encouraged to choose other topics they felt were important to them. The therapist's role was principally to listen, and the intervention was based upon listening skills drawn from counselling techniques including using minimal encouragers, paraphrasing, empathizing, reflecting, and summarizing.
Duration of follow-up	12-months
Sources of funding	Not industry funded
Sample size	N=94 CBT: n=48

	SL: n=46

CBT: cognitive behaviour therapy; N/n: number of participants; RCT: randomised controlled trial; RMS: relapsing multiple sclerosis; SD: standard deviation; SL: supportive listening

Outcomes

Study timepoints

- Baseline
- Post intervention (10 weeks from baseline)
- 12 months post intervention

CBT versus SL: physical and mental health related quality of life and social care related quality of life, mood, coping and adjustment

Physical and mental health related quality of life and social care related quality of life as measured by EQ-5D - Polarity - Lower values are better

Mood as measured by GHQ Distress - Polarity - Lower values are better

Coping and adjustment as measured by ACHC - Polarity - Higher values are better

Outcome	CBT, post-intervention, GHQ N =47, ACHC n=47	CBT, 12-months post-randomisation, EQ-5D N =41, GHQ N =42, ACHC n=41	SL, post-intervention, GHQ N =42, ACHC n=41	SL, 12-months post-randomisation, EQ-5D N = 43, GHQ N =25, ACHC n=43
EQ-5D change in score from baseline Mean (SD)	Not available	-0.02 (0.18)	Not available	0.02 (0.17)

Outcome	CBT, post-intervention, GHQ N =47, ACHC n=47	CBT, 12-months post-randomisation, EQ-5D N =41, GHQ N =42, ACHC n=41	SL, post-intervention, GHQ N =42, ACHC n=41	SL, 12-months post-randomisation, EQ-5D N = 43, GHQ N =25, ACHC n=43
GHQ Distress change in score from baseline Mean (SD)	-3.98 (3.62)	-2.69 (3.65)	-2.39 (3.65)	-1.98 (4.49)
ACHC change in score from baseline Mean (SD)	2.54 (5.18)	3.35 (5.31)	2.2 (4.85)	2.5 (2.69)

ACHC: acceptance of chronic health conditions scale; CBT: cognitive behaviour therapy; EQ-5D: euroQol-5 dimension; GHQ-Distress: feneral health questionnaire-distress; N/n: number of participants; SD: standard deviation; SL: supportive listening

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Randomisation was block stratified with varying block sizes. Randomisation was handled by an independent service, and the randomization sequence was concealed from the research team. No significant differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*

Section	Question	Answer
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: EQ-5D, GHQ-12, ACHC. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

ACHC: acceptance of chronic health conditions scale; EQ-5D: euroQol-5 dimension; GHQ-Distress: feneral health questionnaire-distress; ITT: intention-to-treat; SD: standard deviation

Murdoch, 2020

Bibliographic Reference	Murdoch, Kenneth C; Larsen, Denise; Edey, Wendy; Arsenault, Chelsea; Howell, Andrew; Joyce, Anthony; Sandham, Tricia; Miyasaki, Janis M; The efficacy of the Strength, Hope and Resourcefulness Program for people with Parkinson's disease (SHARP-PWP): A mixed methods study.; Parkinsonism & related disorders; 2020; vol. 70; 7-12

Study details

Country/ies where study was carried out	Canada
Study type	Randomised controlled trial (RCT)
Study dates	Not reported
Inclusion criteria	- Fulfilled the Movement Disorder Society clinical criteria for Parkinson's disease, - Diagnosed within the last 5 years, - Capacity to provide consent.
Exclusion criteria	- Experienced psychotic symptoms; - Unable to speak English; - Dementia or significant cognitive impairment
Patient characteristics	N=31 adults with Parkinson's disease - Strength, Hope and Resourcefulness Program for people with Parkinson's disease (SHARP-PWP): n=15 - Waitlist control: n=16 Age in years [Mean (SD)]: - SHARP-PWP: 65.53 (9.11) - Waitlist control: 67.37 (9.8) Sex (M/F): - SHARP-PWP: n=7/n=8

	- Waitlist control: n=6/n=10 Time since diagnosis in years [Mean (SD)]: - SHARP-PWP: 2.47 (1.24) - Waitlist control: 2.62 (1.36) Chronic Neurological Disorder Category: Progressive Neurological Disease
Intervention(s)/control	**Intervention** Name: Strength, Hope and Resourcefulness Program for people with Parkinson's disease Protocol intervention group: Interventions for adjustment and engagement Delivery setting: In-person group Number/frequency of sessions: 2-hours weekly Duration: 6 weeks Practitioner: Trained therapist Engaged in several activities and discussions related to living with hope and strength in the face of Parkinson’s disease. Activities focused upon discussion, arts-based expression, and storytelling around hope and personal strength. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable

	Duration: Not applicable Practitioner: Not applicable
Duration of follow-up	Post-intervention
Sources of funding	Not industry funded
Sample size	N=31 SHARP-PWP: n=15 Waitlist control: n=16

N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation; SHARP-PWP: strength, hope and resourcefulness program for people with Parkinson's disease

Outcomes

Study timepoints

- Baseline
- Post intervention (6 weeks from baseline)

SHARP-PWP versus waitlist control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by PDQ-8 - Polarity - Lower values are better

Mood as measured by BAI - Polarity - Lower values are better

Mood as measured by PHQ-9 - Polarity - Lower values are better

Outcome	SHARP-PWP, post-intervention, N =15	Waitlist control, post-intervention, N = 16
PDQ-8 change in score from baseline Mean (SD)	-0.2 (0.46)	-0.11 (0.33)
BAI change in score from baseline Mean (SD)	-0.08 (0.38)	-0.02 (0.29)
PHQ-9 change in score from baseline Mean (SD)	-0.08 (0.39)	-0.11 (0.44)

BAI: Beck anxiety inventory; N/n: number of participants; PDQ-8: Parkinson's disease questionnaire–8; PHQ-9: Patient health questionnaire-9; SD: standard deviation; SHARP-PWP: strength, hope and resourcefulness program for people with Parkinson's disease

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	High *(No information on randomisation process or allocation concealment. Differences in baseline characteristics, but authors didn't provide statistics or comment on imbalances.)*
Domain 2a: Risk of bias due to deviations from the intended	Risk of bias for deviations from the intended interventions	Some concerns *(Although participants and personnel were aware of interventions allocated,*

Section	Question	Answer
interventions (effect of assignment to intervention)	(effect of assignment to intervention)	*there were no deviations from intended interventions. No details if ITT analyses performed.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Some concerns *(11% of participants across both groups were lost to follow-up at the assessment time-point (no details on individual losses in each group); all results were biased by missing data; no detail if loss to follow-up were balanced between groups so missingness may depend on true value.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: PDQ-8, PHQ-9; BAI. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Some concerns *(Published protocol available. No supplementary appendix to raw mean difference scores between intervention and control for all outcomes.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

BAI: Beck anxiety inventory; ITT: intention-to-treat; PDQ-8: Parkinson's disease questionnaire–8; PHQ-9: patient health questionnaire-9

2 **Nathan, 2017**

Bibliographic Reference	Nathan, Howard J; Poulin, Patricia; Wozny, Denise; Taljaard, Monica; Smyth, Cathy; Gilron, Ian; Sorisky, Alexander; Lochnan, Heather; Shergill, Yaad; Randomized Trial of the Effect of Mindfulness-Based Stress Reduction on Pain-Related Disability, Pain Intensity, Health-Related Quality of Life, and A1C in Patients With Painful Diabetic Peripheral Neuropathy.; Clinical diabetes : a publication of the American Diabetes Association; 2017; vol. 35 (no. 5); 294-304

3 **Study details**

Country/ies where study was carried out	Canada
Study type	Cluster randomised controlled trial
Study dates	5 July 2013-4 September 2015
Inclusion criteria	Men and women who were ≥18 years of age, had type 1 or type 2 diabetes and symptoms of PDPN for >6 months, and could speak English or French and understand and complete the questionnaires
Exclusion criteria	Previously taken an MBSR or similar course
Patient characteristics	N=66 adults with diabetic peripheral neuropathy - Mindfulness: n=33 - Waitlist control: n=33 Age in years [Mean (SD)]: - Mindfulness: 59.7 (9.1) - Waitlist control: 59.8 (8.7) Sex (M/F):

	- Mindfulness: n=15/n=15 - Waitlist control: n=12/n=20 Time since diagnosis in years [Mean (SD)]: not reported Chronic Neurological Disorder Category: Acquired Peripheral Nerve Disorders
Intervention(s)/control	**Intervention** Name: Mindfulness Protocol intervention group: Interventions for adjustment and engagement Delivery setting: 2–3 study patients would join a group of 12–20 participants with a variety of complaints such as pain, anxiety, or depression. Number/frequency of sessions: 8x2.5-hour sessions per week + 1x6-hour session on a weekend day midway through the course Duration: 8 weeks Practitioner: Therapist MBSR courses offered at multiple sites in the community by practitioners who had formal training in MBSR and ≥5 years of experience as workshop leaders. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable

	Practitioner: Not applicable Participants in both the control and MBSR groups were discouraged from making any changes in medication from the time of randomisation until after the final assessment.
Duration of follow-up	3-months
Sources of funding	Not industry funded
Sample size	N=66 Mindfulness: n=33 Waitlist control: n=33

MBSR: mindfulness-based stress reduction; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- 3 months post intervention

Mindfulness versus waitlist control: mood and pain

Mood as measured by PHQ-9 - Polarity - Lower values are better

Mood as measured by PSS - Polarity - Lower values are better

Pain as measured by BPI-Severity - Polarity – Lower values are better

Outcome	Mindfulness, 3-months post-intervention, N = 29	Waitlist control, 3-months post-intervention, N = 32
PHQ-9 change in score from baseline Mean (SD)	-4.75 (4.81)	0.06 (4.41)
PSS change in score from baseline Mean (SD)	-4.64 (5.06)	1.75 (9.02)
BPI change in score from baseline Mean (SD)	-1.59 (1.86)	0.33 (1.25)

BPI: brief pain inventory; N/n: number of participants; PHQ-9: patient health questionnaire-9; PSS: perceived stress scale; SD: standard deviation

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
1a. Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-generated random numbers and concealed allocation. No statistical differences in baseline characteristics.)*
1b. Bias arising from the timing of identification and recruitment of individual participants in relation to timing of randomisation	Risk of bias judgement for the timing of identification and recruitment of individual participants in relation to timing of randomisation	Low *(Individual participants identified before randomisation of clusters. No statistical differences in baseline characteristics.)*

2. Bias due to deviations from intended interventions	Risk of bias judgement for deviations from intended interventions	Low *(No details on blinding but given nature of intervention most likely unblinded. There were no deviations from intended interventions. All participants analysed in their randomised groups.)*
3. Bias due to missing outcome data	Risk of bias judgement for missing outcome data	Some concerns *(9% and 3% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results at risk of bias by missing data; loss to follow-up unbalanced between groups so missingness probably dependent on true value.)*
4. Bias in measurement of the outcome	Risk of bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: PHQ-9, PSS, BDI. No information if assessor blinded to allocation; assessment of outcome could be influenced by knowledge of allocation. Standardised and validated measurement tools implemented by researchers who may or may not be aware of allocation.)*
5. Bias in selection of the reported result	Risk of bias for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable

1 *BPI: Brief pain inventory; PHQ-9: patient health questionnaire-9; PSS: perceived stress scale*

2

3 **Navarta-Sanchez, 2020**

Bibliographic Reference	Navarta-Sanchez, M.V.; Ambrosio, L.; Portillo, M.C.; Ursua, M.E.; Senosiain, J.M.; Riverol, M.; Evaluation of a psychoeducational intervention compared with education in people with Parkinson's disease and their informal caregivers: a quasi-experimental study; Journal of advanced nursing; 2020; vol. 76 (no. 10); 2719-2732

4 **Study details**

Country/ies where study was carried out	Spain
Study type	Cluster randomised controlled trial
Study dates	March 2015 -2017
Inclusion criteria	-Patients with Parkinson's disease, at any stage, without cognitive impairment, who were receiving care as outpatients at the participating centers and were fluent in Spanish, - Informal caregivers over 18 years of age, who were fluent in Spanish, lived or maintained a close relationship with the patient and actively collaborated in his/her care.
Exclusion criteria	Not reported
Patient characteristics	N=140 adults with Parkinson's disease - Psychoeducational intervention n=65 - Education programme: n=75 Age in years [Mean (SD)]: - Psychoeducational intervention: 75.4 (8.2) - Education programme: 72.4 (8.2) Sex (M/F): - Psychoeducational intervention: n=44/n=21 - Education programme: male, n=53/n=22 Time since diagnosis in years [Mean (SD)]: - Psychoeducational intervention: 5.8 (5.2)

	- Education programme: 7.8 (6.5) Chronic Neurological Disorder Category: Progressive Neurological Diseases
Intervention(s)/control	**Intervention** Name: Psychoeducational intervention Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Group setting in Primary Care Centre Number/frequency of sessions: 1x90-minute session per week Duration: 9 weeks Practitioner: Multidisciplinary team (GP, neurologist, nurse, social worker, expert patient, psychologist) Sessions content: introduction to the intervention; motor and non-motor symptoms of PD; pharmacological and surgical options of treatment; healthy lifestyles (diet, physical exercise, fall prevention, sleep/rest and social life); information about how to apply for the resources for people with disabilities and their families; the psychosocial adaptation to PD and coping skills in everyday life; benefits of practicing positive self-esteem, empathy and patience in their everyday life; relaxation techniques for the management the stress; advantages of looking for information, living in the present, partaking in activities, searching for the normalization of the situation; conclusions) People with Parkinson’s disease and caregivers received the session at the same time in different room **Control** Name: Education programme Protocol description: Control Delivery setting: Group setting in Primary Care Centre Number/frequency of sessions: 1x90-minute session per week

	Duration: 5 weeks Practitioner: (GP, neurologist, nurse, social worker) The education program for the control group included general information about PD, healthy lifestyles and different community resources. This program was designed to be similar to the education generally received by patients with PD and informal caregivers as part of standard care. Session content: introduction to the intervention; motor and non-motor symptoms of PD; pharmacological and surgical options of treatment; healthy lifestyles (diet, physical exercise, fall prevention, sleep/rest and social life); information about how to apply for the resources for people with disabilities and their families; conclusions)
Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	People with Parkinson's disease N=140 - Psychoeducational intervention: n=65 - Education programme: n=75 Informal carers N=127 - Psychoeducational intervention: n=54 - Education programme: n=73

1 *GP: general practitioner; N/n: number of participants; PD: Parkinson's disease; RCT: randomised controlled trial; SD: standard deviation*

2

Outcomes

Study timepoints

- Baseline
- Post intervention (9 weeks from baseline)
- 6 months post intervention

Psychoeducation versus education: physical and mental health related quality of life and social care related quality of life, coping and adjustment, carer quality of life

Physical and mental health related quality of life and social care related quality of life as measured by PDQ-39 - Polarity - Lower values are better

Coping and adjustment as measured by Brief COPE - Polarity - Higher values are better

Carer quality of life as measured by SQLC - Polarity - Higher values are better

Outcome	Psychoeducational, post-intervention, PDQ-39/BRIEF COPE N = 51, SQLC N=37	Psychoeducational, 6-months post-intervention, PDQ-39/BRIEF COPE N = 51, SQLC N=37	Education, post-intervention, PDQ-39/BRIEF COPE N = 59, SQLC N=53	Education, 6-months post-intervention, PDQ-39/BRIEF COPE N = 59, SQLC N=53
PDQ-39 change in score from baseline Mean (SD)	-0.96 (10.24)	3.23 (12.27)	-2.39 (7.95)	4.25 (8.96)
BRIEF COPE change in score from baseline	-1.02 (7.01)	-0.78 (8.02)	-1.26 (7.15)	-1.08 (7.12)

Outcome	Psychoeducational, post-intervention, PDQ-39/BRIEF COPE N = 51, SQLC N=37	Psychoeducational, 6-months post-intervention, PDQ-39/BRIEF COPE N = 51, SQLC N=37	Education, post-intervention, PDQ-39/BRIEF COPE N = 59, SQLC N=53	Education, 6-months post-intervention, PDQ-39/BRIEF COPE N = 59, SQLC N=53
Mean (SD)				
SQLC change in score from baseline Mean (SD)	1.28 (16.36)	0.53 (15.7)	-0.81 (14.88)	-3.83 (16.48)

BRIEF-COPE: coping orientation to problems experienced inventory; N/n: number of participants; PDQ-39: Parkinson's disease questionnaire–39; SD: standard deviation; SQLC: scale of quality of life of caregivers

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
1a. Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(Coin toss randomisation and no details on allocation concealment. No statistical differences in baseline characteristics.)*
1b. Bias arising from the timing of identification and recruitment of individual participants in relation to timing of randomisation	Risk of bias judgement for the timing of identification and recruitment of individual participants in relation to timing of randomisation	Low *(Individual participants identified before randomisation of clusters. No statistical differences in baseline characteristics.)*
2. Bias due to deviations from intended interventions	Risk of bias judgement for deviations from intended interventions	Low *(Participants and personnel were not aware of interventions allocated, there were no deviations from intended interventions.)*

3. Bias due to missing outcome data	Risk of bias judgement for missing outcome data	High *(8% and 12% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results were biased by missing data; loss to follow-up not balanced between groups so missingness may depend on true value.)*
4. Bias in measurement of the outcome	Risk of bias judgement for measurement of the outcome	Low *(The questionnaires used were all validated and widely used tools: PDQ-39, BRIEF-COPE, SQLC. Standardised and validated measurement tools implemented by participants and researchers blinded to allocation.)*
5. Bias in selection of the reported result	Risk of bias for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

BRIEF-COPE: coping orientation to problems experienced inventory; ITT: intention-to-treat; PDQ-39: Parkinson's disease questionnaire–39; SQLC: scale of quality of life of caregivers

Okai, 2013

Bibliographic Reference	Okai, David; Askey-Jones, Sally; Samuel, Michael; O'Sullivan, Sean S; Chaudhuri, K Ray; Martin, Anne; Mack, Joel; Brown, Richard G; David, Anthony S; Trial of CBT for impulse control behaviors affecting Parkinson patients and their caregivers.; Neurology; 2013; vol. 80 (no. 9); 792-9

Study details

Country/ies where study was carried out	UK
Study type	Randomised controlled trial (RCT)
Study dates	August 2008 - August 2011
Inclusion criteria	- Diagnosis of idiopathic Parkinson's disease according to UK Parkinson's Disease Society Brain Bank criteria and associated ICB which had failed to remit despite standard measures taken by the treating neurologist, including medication changes.
Exclusion criteria	- Mini-Mental State Examination scores <24, - Non-English speakers, - Those without an identifiable carer able to participate in the trial.
Patient characteristics	N=45 adults with Parkinson's disease - CBT n=28 - Waitlist control: n=17 Age in years [Mean (SD)]: - CBT: 59.3 (8.1) - Waitlist control: 57.9 (9.5) Sex (M/F): - CBT: n=19/n=9 - Waitlist control: n=12/n=5 Time since diagnosis in years [Mean (SD)]:

	- CBT: 10.5 (6) - Waitlist control: 8.8 (5.6) Chronic Neurological Disorder Category: Progressive Neurological Disorders
Intervention(s)/control	**Intervention** Name: Cognitive Behavioural Therapy for Impulse Control Behaviour Protocol intervention group: Interventions for adaptive dysfunction and behaviours that challenge others Delivery setting: Usually in patients' homes, although some sessions were done in clinic Number/frequency of sessions: weekly for 12 sessions Duration: 12 weeks Practitioner: Nurse Therapist CBT ICB modules: Assessment of problems; Education and introduction to cognitive behavioural therapy; Motivational interviewing; Monitoring of behaviour; Pleasant activity scheduling; Problem solving; Relaxation and mood training; Identifying and challenging negative thoughts and feelings related to ICB; Executive dysfunction; Review, planning for the future, and ending of treatment. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable

Duration of follow-up	6-months
Sources of funding	Not industry funded
Sample size	N=45 - CBT: n=28 - Waitlist control: n=17

CBT: cognitive behaviour therapy; ICB: impulse control behaviour; N/n: number of participants; PD: Parkinson's disease; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- 6 months post intervention

CBT versus control: mood, coping and adjustment, behaviour change

Mood as measured by BAI - Polarity - Lower values are better

Mood as measured by BDI - Polarity - Lower values are better

Coping and adjustment as measured by WSAS-Polarity-Higher values are better

Behaviour change as measured by NPI - Polarity - Lower values are better

Behaviour change as measured by ICBSS - Polarity - Lower values are better

Outcome	CBT, 6-months post-intervention, BAI/BDI N=22, WSAS N = 21, NPI N= 25, ICBSS N= 19	Waitlist control, 6-months post-intervention, BAI/BDI N=13, WSAS N = 14, NPI N= 13, ICBSS N= 12
BAI change in score from baseline Mean (SD)	-6 (7.85)	1.5 (9.69)
BDI change in score from baseline Mean (SD)	-9.9 (6.2)	2.4 (6.72)
WSAS change in score from baseline Mean (SD)	8.7 (5.76)	-2.3 (7)
NPI change in score from baseline Mean (SD)	-9.6 (2.11)	1.8 (10.94)
ICBSS change in score from baseline Mean (SD)	*-6.3 (4.29)*	*-2.5 (3.6)*

BAI: Beck anxiety inventory; BDI: Beck depression inventory; CBT: cognitive behavioural therapy; CI: confidence interval; ICBSS: impulse control behaviour symptom scale; N/n: number of participants; NPI: neuropsychiatric inventory; SD: standard deviation; WSAS: work and social adjustment scale

1

2 **Critical appraisal - Cochrane RoB 2**

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Randomization was via random number tables held independently. No information on allocation concealment. No differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Some concerns *(10% and 0% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; no evidence results biased by missing data.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: GHQ, BDI, BAI, ICBSS, Zarit. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published Protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable

Section	Question	Answer
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

BAI: Beck anxiety inventory; BDI: Beck depression inventory; CBT: cognitive behavioural therapy; CI: confidence interval; ICBSS: impulse control behaviour symptom scale; ITT: intention-to-treat; NPI: neuropsychiatric inventory; WSAS: work and social adjustment scale

Pohl, 2013

Bibliographic Reference	Pohl, Petra; Dizdar, Nil; Hallert, Eva; The Ronnie Gardiner Rhythm and Music Method - a feasibility study in Parkinson's disease.; Disability and rehabilitation; 2013; vol. 35 (no. 26); 2197-204

Study details

Country/ies where study was carried out	Sweden
Study type	Randomised controlled trial (RCT)
Study dates	Not reported
Inclusion criteria	- Diagnosis of Parkinson’s disease (PD), - Any duration of PD, - Any PD therapy or treatment, but stable, - Able to get down in a squatting position and to walk at least 10 metres without support, - Correctable auditory and visual capability,

	- Able to access transportation to and from research sessions.
Exclusion criteria	- Secondary or atypical PD, - Colour blindness, - Severe depression, - Participating in any other on-going stud, - Having ≥ 3 points per question in part I, in question number 13-15 in part II and in question number 24-30 in part III of the Unified Parkinson Disease Rating Scale.
Patient characteristics	N=18 adults with Parkinson's disease - Ronnie Gardiner Rhythm and Music Method (RGRM) n=12 - Waitlist control: n=6 Age in years [Mean (SD)]: Whole population (arm-based data not available): 68.2 (5.1) Sex (M/F): Whole population (arm-based data not available): n=8/n=10 Time since diagnosis in years [Mean (SD)]: Whole population (arm-based data not available): 8.8 (3.8) Chronic Neurological Disorder Category: Progressive Neurological Diseases
Intervention(s)/control	**Intervention** Name: Ronni Gardiner Rhythm and Music Method

	Protocol intervention group: Creative therapies Delivery setting: Supervised (no further details on setting) Number/frequency of sessions: 2x 1-hour sessions per week for 6 weeks Duration: 6 weeks Practitioner: RGRM practitioner No further details on intervention content. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable
Duration of follow-up	Post-intervention
Sources of funding	Not industry funded
Sample size	N=18 - RGRM: n=12 - Waitlist control: n=6

N/n: number of participants; PD: Parkinson's disease; RCT: randomised controlled trial; RGRM: Ronni Gardiner rhythm and music method; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (6weeks from baseline)

RGRM versus control: physical and mental health related quality of life and social care related quality of life

Physical and mental health related quality of life and social care related quality of life as measured by PDQ-39 - Polarity - Lower values are better

Outcome	RGRM, post-intervention, N = 12	Waitlist control, post-intervention, N = 4
PDQ-39 Mean (95% CI)	-3.6 (-6.8 to 0.6)	-7.3 (-11.9 to 12.8)

CI: confidence intervals; N/n: number of participants; PDQ-39: Parkinson's disease questionnaire–39; RGRM: Ronnie Gardiner rhythm and music method

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Computer-based program for randomization process. No details on allocation concealment. No differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Single-blinded study, unclear who was blinded. There were no deviations from intended interventions. All participants analysed in their randomised groups.)*

Section	Question	Answer
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	High *(0% and 33% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results at risk of bias by missing data; loss to follow-up unbalanced between groups so missingness probably dependent on true value.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	High *(The questionnaires used were all validated and widely used tools: PDQ-39.* Standardised and validated measurement tools implemented by researchers aware of allocation*.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

1 *PDQ-39: Parkinson's disease questionnaire-39*

2

3 **Ponsford, 2022**

Bibliographic Reference	Ponsford, Jennie L; Hicks, Amelia J; Gould, Kate R; Downing, Marina G; Hopwood, Malcolm; Feeney, Tim J; Positive behaviour support for adults with acquired brain injury and challenging behaviour: A randomised controlled trial.; Annals of physical and rehabilitation medicine; 2022; vol. 65 (no. 2); 101604

4 **Study details**

Country/ies where study was carried out	Australia
Study type	Randomised controlled trial (RCT)
Study dates	Not reported
Inclusion criteria	- 17 to 65 years old, - Sustained a non-progressive acquired brain injury (e.g., traumatic brain injury, stroke, hypoxic injury), - Current challenging behaviours on the OBS occurring since injury, - Having a reliable informant.
Exclusion criteria	- Another current psychiatric disorder contributing to the behaviour, diagnosed by using the Health of the Nation Outcome Scale-Acquired Brain Injury
Patient characteristics	N=49 adults with acquired brain injury - Positive Behaviour Support (PBS + PLUS): n=24 - Waitlist control: n=25 Age in years [Mean (SD)]: - PBS + PLUS: 42.92 (11.52) - Waitlist control: 43.60 (12.06) Sex (M/F): - PBS + PLUS: n=22/n=2 - Waitlist control: n=15/n=10

	Time since diagnosis in years [Mean (SD)]: - PBS + PLUS: 8.71 (1.53) - Waitlist control: 8.68 (1.45) Chronic Neurological Disorder Category: Acquired Brain Injury
Intervention(s)/control	**Intervention** Name: Positive Behaviour Support Protocol intervention group: Interventions for adaptive dysfunction and behaviours that challenge others Delivery setting: Location negotiated Number/frequency of sessions: Session frequency negotiated Duration: 12-months Practitioner: Therapists were allied health professionals with a mean of 11.7 years experience in brain injury, community practice and behaviour interventions (4 neuropsychologists, 2 occupational therapists, 2 speech pathologists, 2 dual-trained). The intervention is called PBS+PLUS because of the addition of cognitive-executive elements specific to brain injury. Person-driven and collaborative approach to building a more meaningful life after brain injury and improving self-regulation of behaviour to achieve this. “PLUS” in PBS+PLUS is an abbreviation of 4 fundamental principles: “Person driven. Learning together. Uniting supports. Skill building.” Initial sessions focused on identifying meaningful outcomes for the participant, steps required to achieve these, current obstacles including behavioural obstacles, strengths/ supports available, and objective criteria and a time-frame for achieving goals. The approaches implemented to achieve goals in collaboration with natural supports included behavioural self-regulation strategies, increasing social support, environmental changes, and addressing cognitive, emotional, communication and physical barriers. Additional strategies used in the PBS+PLUS approach address common ABI-related cognitive −executive and communication impairments.

	Control Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable
Duration of follow-up	24-months
Sources of funding	Not industry funded
Sample size	N=49 - PBS+PLUS: n=24 - Waitlist control: n=25
Other information	27% of ABI population were adult stroke survivors (outside of protocol)

ABI: acquired brain injury; N/n: number of participants; OBS: overt behaviour scale; PBS + PLUS: positive behaviour support; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline

1 •12 months post intervention

2

3 **PBS+PLUS versus waitlist control: behaviour change**

4 Behaviour change as measured by OBS-CWS - Polarity - Lower values are better

Outcome	PBS+PLUS, 12-months post-intervention, N = 24	Waitlist control, 12-months post-intervention, N = 25
OBS-CWS change in score from baseline Mean (SD)	-4.43 (5.12)	-5.64 (7.5)

5 *N/n: number of participants; OBS-CWS: overt behaviour scale−clinical weighted severity score; PBS + PLUS: positive behaviour support; SD: standard deviation*

6

7 **Critical appraisal - Cochrane RoB 2**

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Random permuted blocks and allocation concealment via sealed opaque envelopes. No significant difference in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All randomised participants analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: OBS-*

Section	Question	Answer
		CWS. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants/carer aware of allocation.)
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

ITT: intention-to-treat; OBS-CWS: overt behaviour scale−clinical weighted severity score

Potter, 2016

Bibliographic Reference	Potter, Sebastian D S; Brown, Richard G; Fleminger, Simon; Randomised, waiting list controlled trial of cognitive-behavioural therapy for persistent postconcussional symptoms after predominantly mild-moderate traumatic brain injury.; Journal of neurology, neurosurgery, and psychiatry; 2016; vol. 87 (no. 10); 1075-83

Study details

Country/ies where study was carried out	UK
Study type	Randomised controlled trial (RCT)
Study dates	March 2003 - June 2009

Inclusion criteria	- Age between 18 and 65 at the time of initial assessment, - Evidence for (at minimum) a mild traumatic brain injury at least 6 months before; and symptoms consistent with the International Classification of Diseases criteria for Postconcussional Disorder, as laid out in the Diagnostic Criteria for Research.
Exclusion criteria	- Non-fluent English, Mini-Mental State Exam scores of <20 and/or Frontal Assessment Battery scores of <10; moderate–severe physical disability (Barthel Index score <15), - Previous receipt of four or more sessions of CBT after their traumatic brain injury. - Other neurological disorder independent of the traumatic brain injury (eg, non-post-traumatic epilepsy); drug/alcohol misuse meeting ICD-criteria for a dependence syndrome; - Clinically assessed risk of self-harm or severe psychiatric illness necessitating involvement of a Community Mental Health Team.
Patient characteristics	N=46 adults with acquired brain injury - CBT: n=26 - Waitlist control: n=20 Age in years [Mean (SD)]: - CBT: 40.1 (10.3) - Waitlist control: 43.1 (13.1) Sex (M/F): - CBT: n=15/n=11 - Waitlist control: n=10/n=10

	Time since injury in months [Mean (SD)]: - CBT: 42 (39) - Waitlist control: 34 (38) Chronic Neurological Disorder Category: Acquired Brain Injury
Intervention(s)/control	**Intervention** Name: Cognitive Behavioural Therapy (CBT) Protocol intervention group: Interventions for adjustment and engagement Delivery setting: Outpatient clinic Number/frequency of sessions: 12x1-hour weekly sessions Duration: 12 weeks Practitioner: Clinical Neuropsychologist The first three sessions were broadly focused on problem identification, psychoeducation based on a range of sources, socialising the patient to the CBT model and formulation. Sessions 4–12 focused on the individual target problems identified collaboratively with the therapist. In the final three sessions, time was increasingly focused on relapse prevention and how to maintain therapeutic gains. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable

	Practitioner: Not applicable
Duration of follow-up	Post-intervention
Sources of funding	Not industry funded
Sample size	N=46 - CBT: n=26 - Control: n=20

CBT: cognitive behavioural therapy; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation; TBI: traumatic brain injury

Outcomes

Study timepoints

- Baseline
- Post intervention (12 weeks from baseline)

CBT versus control: physical and mental health related quality of life and social care related quality of life, mood, pain, behaviour change

Physical and mental health related quality of life and social care related quality of life as measured by QOLAS - Polarity - Lower values are better

Mood as measured by HADS-A - Polarity - Lower values are better

Mood as measured by HADS-D - Polarity - Lower values are better

Pain as measured by MPQ - Polarity - Lower values are better

Behaviour change as measured by STAXI-2 - Polarity - Lower values are better

Outcome	CBT, post-intervention, N = 25	Control, post-intervention, N = 20
QOLAS change in score from baseline Mean (SD)	-8.6 (7)	-2.9 (4.92)
HADS-A change in score from baseline Mean (SD)	-1 (3.43)	-0.8 (3.43)
HADS-D change in score from baseline Mean (SD)	-1.2 (3.32)	-0.3 (2.72)
MPQ change in score from baseline Mean (SD)	0.1 (0.92)	0.2 (0.61)
STAXI-2 change in score from baseline Mean (SD)	-5.1 (10.79)	-1.7 (11.26)

CBT: cognitive behavioural therapy; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; MPQ: McGill Pain questionnaire; N/n: number of participants; QOLAS: quality of life assessment schedule; RCT: randomised controlled trial; SD: standard deviation; STAXI-2: state-trait anger expression inventory-2

Critical appraisal Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Randomisation used minimisation method. No information on allocation concealment, however done by clinical trials unit. No differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(1 participant discontinued CBT and was lost to follow-up, no further details on why participant discontinued CBT.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: QOLAS, HADS, MPQ, STAXI-2. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable

Section	Question	Answer
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

HADS: hospital anxiety and depression scale; ITT: intention-to-treat; MPQ: McGillpPain questionnaire; QOLAS: quality of life assessment schedule; RCT: randomised controlled trial; STAXI-2: state-trait anger expression inventory-2

Sesel, 2022

Bibliographic Reference	Sesel, Amy-Lee; Sharpe, Louise; Beadnall, Heidi N; Barnett, Michael H; Szabo, Marianna; Naismith, Sharon L; A randomized controlled trial of a web-based mindfulness programme for people with MS with and without a history of recurrent depression.; Multiple sclerosis (Houndmills, Basingstoke, England); 2022; vol. 28 (no. 9); 1392-1401

Study details

Country/ies where study was carried out	Australia
Study type	Randomised controlled trial (RCT)
Study dates	November 2017 - March 2019
Inclusion criteria	- Diagnosis of multiple sclerosis with permission to contact neurologist to verify; - ≤18 years old, - Living in Australia, - Internet access, - Sufficient English to complete questionnaires and understand programme content in English,

	- A stable medication regimen for>1month; and if taking anti-depressant medication, a stable dose for >2 months.
Exclusion criteria	- Serious comorbid medical illness, - Moderate-severe cognitive deficits (<25 on the Telephone Interview for Cognitive Status; TICS10), - Suicidal intent, - Alcohol/drug dependence, - Psychotic illness, - Received six or more sessions of psychotherapy within the last 6 months, - Pregnant.
Patient characteristics	N=132 adults with multiple sclerosis - Online mindfulness-based intervention (MBI): n=69 - Waitlist control: n=63 Age in years [Mean (SD)]: - MBI: 45.13 (10.74) - Waitlist control: 44.78 (9.71) Sex (M/F): Not reported Time since diagnosis in years [Mean (SD)]: - MBI: 9.64 (8.3) - Waitlist control: 7.6 (6.85) Chronic Neurological Disorder Category: Progressive Neurological Diseases

Intervention(s)/control	**Intervention** Name: Online mindfulness-based intervention Protocol intervention group: Interventions for adjustment and engagement Delivery setting: online and telephone Number/frequency of sessions: 5 interactive modules (15 minutes each) and 5 meditation audio-guides (30 minutes each) for daily practice Duration: 8 weeks Practitioner: Psychologist Topics included introduction, dealing with stress, difficult sensations and emotions, thoughts, and mindful communication, self-compassion, and relapse prevention. Five meditation audio-guides (30 minutes each) were provided, a different one every 1–2 weeks, for daily practice. Participants were offered 5–8 brief telephone calls (tele-coaching; 10minutes max.) from a psychologist to encourage meditation adherence and resolve any technological difficulties. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable
Duration of follow-up	6-months

Sources of funding	Not industry funded
Sample size	N=132 - MBI: n=69 - Control: n=63
Other information	BPI data not extracted as 2 subscales reported and not overall score. GAD-7 data not extracted as no data for overall population - stratified by history of depression and no history of depression.

MBI: mindfulness-based intervention; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)

Online MBI versus waitlist control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by MSIS-29 Total - *Polarity* - Lower values are better

Mood as measured by CES-D - Polarity - Lower values are better

Outcome	**Online MBI versus waitlist control, post-intervention, N= 58 vs 60**
MSIS-29 Cohen’s D (95% CI)	0.5 (0.141 to 0.853)

Outcome	Online MBI versus waitlist control, post-intervention, N= 58 vs 60
CES-D post-intervention Cohen's D (95% CI)	0.39 (0.034 to 0.742)

CES-D: Centre for Epidemiologic Studies depression scale; CI: confidence interval; MBI: mindfulness-based intervention; MSIS-29: multiple sclerosis impact scale-29 items; N/n: number of participants

Critical appraisal - Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(Computer-generated random numbers. No details on allocation concealment. No significant differences between groups for any participant demographic characteristics, but differences in CES-D, GAD-7, MSIS-29 and PHQ-9 at baseline.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Some concerns *(16% and 5% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; all results were biased by missing data; loss to follow-up not balanced between groups so missingness may depend on true value. However, authors conducted sensitivity analyses to account for missingness.)*

Section	Question	Answer
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: CES-D, MSIS-29. No information if the assessors were blinded. Outcomes are all subjective, therefore could be influenced by knowledge of intervention received.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Some concerns *(Protocol published available. No data available on raw mean differences between intervention or control, only final adjusted analyses.)*
Overall bias and Directness	Risk of bias judgement	High
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

CES-D: Centre for Epidemiologic Studies depression scale; GAD-7: generalised anxiety disorder-7; ITT: intention-to-treat; MSIS-29: multiple aclerosis impact scale-29 item; PHQ-9: patient health questionnaire

Simpson, 2017

Bibliographic Reference	Simpson, Robert; Mair, Frances S; Mercer, Stewart W; Mindfulness-based stress reduction for people with multiple sclerosis - a feasibility randomised controlled trial.; BMC neurology; 2017; vol. 17 (no. 1); 94

Study details

Country/ies where study was carried out	UK
Study type	Randomised controlled trial (RCT)

Study dates	June - August 2014
Inclusion criteria	- >18 years old, - Neurologist confirmed diagnosis of multiple sclerosis, - Able to understand spoken and written English, - A score of less than or equal to 7.0 on the Expanded Disability Status Scale.
Exclusion criteria	- Life-threatening physical or mental health comorbidities (for example, suicidal ideation, active psychosis, or terminal/life threatening inter-current medical illness), or such conditions expected to significantly limit participation and adherence (such as dementia, pregnancy, on-going substance abuse), - Those currently receiving another form of psychological intervention (non-pharmacological).
Patient characteristics	N=50 adults with multiple sclerosis - Mindfulness-based stress reduction (MBSR): n=25 - Waitlist control: n=25 Age in years [Mean (SD)]: - MBSR: 43.6 (10.7) - Waitlist control: 46.3 (11.1) Sex (M/F): - MBSR: n=2/n=23 - Waitlist control: n=3/n=2 Time since diagnosis in months [Mean (SD)]: - MBSR: 8.9 (8.5)

	- Waitlist control: 9.6 (9.4) Chronic Neurological Disorder Category: Progressive Neurological Diseases
Intervention(s)/control	**Intervention** Name: Mindfulness-based Stress Reduction (MBSR) Protocol intervention group: Interventions for adjustment and engagement Delivery setting: In-person group Number/frequency of sessions: 8 sessions, 1 per week (no timeframe reported) + home-practice (45-minutes daily) Duration: 8 weeks Practitioner: Physician facilitators The intervention was based on standard MBSR, including home practice materials, but without the day retreat at week six; excluded for pragmatic, space-constraint reasons, as well as empirical evidence contesting its necessity. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable

Duration of follow-up	3-months
Sources of funding	Not industry funded
Sample size	N=50 - MBSR: n=25 - Control: n=25

MBSR: mindfulness-based stress reduction; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)
- 3 months post intervention

MBSR versus control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by EQ-5D - Polarity - Higher values are better

Mood as measured by PSS-10 - Polarity - Lower values are better

Mood as measured by MHI-anxiety - Polarity - Higher values are better

Mood as measured by MHI-depression - Polarity - Higher values are better

Outcome	MBSR, post-intervention, N = 25	MBSR, 3-months post-intervention, N = 25	Control, post-intervention, N = 25	Control, 3-months post-intervention, N = 25
EQ-5D change in score from baseline Mean (SD)	-0.71 (2)	-0.71 (2.01)	-0.13 (2.94)	0.04 (2.72)
PSS-10 change in score from baseline Mean (SD)	-7.5 (8)	-4.4 (7.16)	-0.32 (6.27)	-2.87 (4.6)
MHI-anxiety change in score from baseline Mean (SD)	18.86 (20.2)	13.52 (21.45)	8.17 (17.87)	6.26 (13.2)
MHI-depression change in score from baseline Mean (SD)	11.9 (17.43)	4.04 (21.72)	3.91 (19.24)	5 (14.83)

EQ-5D: euroqol-5 dimension; MBSR: mindfulness-based stress reduction; MHI: mental health inventory; N/n: number of participants; PSS: perceived stress scale; SD: standard deviation

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Low *(Randomisation performed, but no details on method. Allocation concealment conducted. Significant baseline difference relating to previous meditation/yoga experience, no other differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used .)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: EQ-5D, PPS, MHI. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available. All analyses provided in supplementary appendix.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

1 *EQ-5D: euroqol-5 dimension; ITT: intention-to-treat; MHI: mental health inventory; PSS: perceived stress scale;*

Siponkoski, 2022

Bibliographic Reference	Siponkoski, Sini-Tuuli; Koskinen, Sanna; Laitinen, Sari; Holma, Milla; Ahlfors, Mirja; Jordan-Kilkki, Paivi; Ala-Kauhaluoma, Katja; Martinez-Molina, Noelia; Melkas, Susanna; Laine, Matti; Ylinen, Aarne; Zasler, Nathan; Rantanen, Pekka; Lipsanen, Jari; Sarkamo, Teppo; Effects of neurological music therapy on behavioural and emotional recovery after traumatic brain injury: A randomized controlled cross-over trial.; Neuropsychological rehabilitation; 2022; vol. 32 (no. 7); 1356-1388

Study details

Country/ies where study was carried out	Finland
Study type	Randomised controlled trial
Study dates	March 2014 - May 2017
Inclusion criteria	- Diagnosed (ICD-10) traumatic brain injury (TBI) fulfilling the criteria of at least moderate severity (Glasgow Coma Scale [Wilson et al., 1998]: ≤12 p and/ or posttraumatic amnesia ≥24 hours), - Time since injury ≤24 months at the time of recruitment, - Cognitive symptoms caused by TBI (attention, executive function, memory, - No previous neurological or severe psychiatric illnesses or substance abuse, - Age 16–60 years, - Native Finnish speaking or bilingual with sufficient communication skills in Finnish, - Living in the Helsinki-Uusimaa area, - Understanding the purpose of the study and being able to give an informed consent.
Exclusion criteria	Not reported

Patient characteristics	N=38 adults with acquired brain injury - Neurological Music Therapy: n=20 - Waitlist control: n=18 Age in years [Mean (SD)]: - Neurological Music Therapy: 41.6 (14.7) - Waitlist control: 41.8 (11.6) Sex (M/F): - Neurological Music Therapy: n=10/n=10 - Waitlist control: n=12/n=6 Time since injury in months [Mean (SD)]: - Neurological Music Therapy: 8.6 (6.7) - Waitlist control: 9 (6.5) Chronic Neurological Disorder Category: Acquired Brain Injury
Intervention(s)/control	**Intervention** Name: Neurological Music Therapy Protocol intervention group: Creative therapies Delivery setting: Individual sessions at outpatient clinic Number/frequency of sessions: 2x1-hour sessions per week (total 20 sessions) Duration: 10 weeks

	Practitioner: Music Therapist The intervention model was adapted from two existing music therapy methods: Functionally-Oriented Music Therapy and Music-Supported Training method. The focus was on active music production with different instruments including drum and piano. Each session included three modules (20 min each): (1) rhythmical training, (2) structured cognitive-motor training, and (3) assisted music playing. **Control** Name: Waitlist control Protocol description: Control (waitlist) Delivery setting: Not applicable Number/frequency of sessions: Not applicable Duration: Not applicable Practitioner: Not applicable
Duration of follow-up	3-months
Sources of funding	Not industry funded
Sample size	N=38 - Neurological Music Therapy: n=20 - Waitlist control: n=18

N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- 3 months from baseline

Neurological Music Therapy versus waitlist control: physical and mental health related quality of life and social care related quality of life, mood

Physical and mental health related quality of life and social care related quality of life as measured by QOLIBRI - Polarity - Higher values are better

Mood as measured by BDI-II - Polarity - Lower values are better

Coping and adjustment as measured by BRIEF-A -Polarity – Lower values are better

Outcome	Neurological Music Therapy, 3-months from baseline, N = 20	Waitlist control, 3-months from baseline, N = 18
QOLIBRI change in score from baseline Mean (SD)	5.5 (12.77)	2.7 (10.98)
BDI-II change in score from baseline Mean (SD)	-2.2 (12.2)	-1.1 (6.41)
BRIEF-A change in score from baseline Mean (SD)	-3.7 (16.16)	-0.55 (11.71)

BDI: Beck depression inventory; N/n: number of participants; QOLIBRI: quality of life after brain injury; SD: standard deviation

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(Online random number generator and no information on allocation concealment. No significant differences in baseline characteristics.)*
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analysis performed.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Low *(All participants randomised were analysed.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: QOLIBRI, BDI. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable

Section	Question	Answer
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

BDI: Beck depression inventory; ITT: intention-to-treat; QOLIBRI: quality of life after brain injury

Tornas, 2016

Bibliographic Reference	Tornas, Sveinung; Lovstad, Marianne; Solbakk, Anne-Kristin; Schanke, Anne-Kristine; Stubberud, Jan; Goal Management Training Combined With External Cuing as a Means to Improve Emotional Regulation, Psychological Functioning, and Quality of Life in Patients With Acquired Brain Injury: A Randomized Controlled Trial.; Archives of physical medicine and rehabilitation; 2016; vol. 97 (no. 11); 1841-1852e3

Study details

Country/ies where study was carried out	Norway
Study type	Randomised controlled trial (RCT)
Study dates	August 2012 - June 2014
Inclusion criteria	- A documented non-progressive acquired brain injury, - Minimum 6 months post injury, - Experiencing ongoing emotional disturbance, - Aged 18 to 67 years.
Exclusion criteria	- Any neurodegenerative disorder,

	- A severe cognitive deficit impeding program participation, - A major psychiatric disease and/or ongoing substance abuse.
Patient characteristics	N=70 adults with acquired brain injury - Goal Management Training (GMT): n=33 - Brain Health Educational Workshop (BHW): n=37 Age in years [Mean (SD)]: - GMT: 42.1 (13.7) - BHW: 43.6 (12.4 Sex (M/F): - GMT: n=19/n=14 - BHW: n=19/n=18 Time since injury in years [Mean (SD)]: - GMT: 8.9 (10.6) - BHW: 6.8 (8.2) Chronic Neurological Disorder Category: Acquired Brain Injury
Intervention(s)/control	**Intervention** Name: Goal Management Training. Protocol intervention group: Interventions to Improve Motivation Delivery setting: Outpatient clinic

	Number/frequency of sessions: 1x2-hour session every 2 weeks for 8 weeks Duration: 8 weeks Practitioner: Experienced neuropsychologist and a skilled co-therapist (rehabilitation nurse, neuropsychologist, or advanced psychology student). The 9 GMT modules were merged into 7, carefully addressing all core concepts of GMT in the same order. Mindfulness exercises were heavily emphasized. The new emotional regulation module was administered after introducing key GMT concepts. Core concepts from CBT were introduced, emphasizing the mutual relationship between thoughts, situations, and emotions and how negative self-talk can become “automatic” and interfere with goal achievement. **Control** Name: Brain Health Educational Workshop Protocol description: Control Delivery setting: Outpatient clinic Number/frequency of sessions: 1x2-hour session every 2 weeks for 8 weeks Duration: 8 weeks Practitioner: Experienced neuropsychologist and a skilled co-therapist (rehabilitation nurse, neuropsychologist, or advanced psychology student). The BHW involved the use of educational materials and lifestyle topics typically part of psycho-educative ABI rehabilitation programs. Homework assignments and in-session tasks included readings, brain games, puzzles, and practical exercises such as logging sleep.
Duration of follow-up	6-months
Sources of funding	Not industry funded

Sample size	N=70 - GMT: n=33 - BHW: n=37
Other information	21.5% of population stroke in adults

ABI: acquired brain injury; BHW: brain health workshop; GMT: goal management training; N/n: number of participants; RCT: randomised controlled trial; SD: standard deviation

Outcomes

Study timepoints

- Baseline
- Post intervention (8 weeks from baseline)
- 6 months post intervention

GMT versus BHW: physical and mental health related quality of life and social care related quality of life, mood, coping and adjustment

Physical and mental health related quality of life and social care related quality of life as measured by QOLIBRI - Polarity - Higher values are better

Mood as measured by HSCL-25-A - Polarity - Lower values are better

Mood as measured by HSCL-25-D - Polarity - Lower values are better

Coping and adjustment as measured by BREQ - Polarity - higher values are better

Outcome	GMT, post-intervention, N = 31	GMT, 6-months post-intervention, N = 31	BHW, post-intervention, N = 34	BHW,6-months post-intervention, N = 34
QOLIBRI change in score from baseline Mean (SD)	0.14 (0.37)	0.31 (0.38)	0.05 (0.28)	0.03 (0.33)
HSCL-25-A change in score from baseline Mean (SD)	-0.17 (4.8)	0.27 (5.6)	-0.62 (3.75)	0.17 (4.31)
HSCL-25-D change in score from baseline Mean (SD)	-2.67 (9.17)	-3.13 (8.97)	0.09 (5.36)	1 (7.16)
BREQ change in score from baseline Mean (SD)	-3.38 (10.33)	-5.03 (10.14)	-1.07 (9.2)	-0.73 (9.98)

BHW: brain health workshop; BREQ: brain injury rehabilitation trust regulation of emotions questionnaire; GMT: goal management training; HSCL-25-A: Hopkins symptoms checklist-25-anxiety; HSCL-25-D: Hopkins symptoms checklist-25-depression; N/n: number of participants; SD: standard deviation; QOLIBRI: quality of life after brain injury

Critical appraisal -Cochrane RoB 2

Section	Question	Answer
Domain 1: Bias arising from the randomisation process	Risk of bias judgement for the randomisation process	Some concerns *(No details on randomisation proceedure other than randomized. Allocation*

Section	Question	Answer
		concealment with enclosed envelopes. No significant differences in baseline characteristics.)
Domain 2a: Risk of bias due to deviations from the intended interventions (effect of assignment to intervention)	Risk of bias for deviations from the intended interventions (effect of assignment to intervention)	Low *(Although participants and personnel were aware of interventions allocated, there were no deviations from intended interventions. ITT analyses were used.)*
Domain 3. Bias due to missing outcome data	Risk-of-bias judgement for missing outcome data	Some concerns *(Only 6% and 8% of participants in the intervention and control groups, respectively were lost to follow-up at the final assessment time-point; no evidence results biased by missing data.)*
Domain 4. Bias in measurement of the outcome	Risk-of-bias judgement for measurement of the outcome	Some concerns *(The questionnaires used were all validated and widely used tools: QOLIBRI, HCLS-25-A; HCLS-D; BREQ. Standardised and validated measurement tools implemented by researchers blinded to allocation, however outcomes subjective and participants aware of allocation.)*
Domain 5. Bias in selection of the reported result	Risk-of-bias judgement for selection of the reported result	Low *(Published protocol available.)*
Overall bias and Directness	Risk of bias judgement	Some concerns
Overall bias and Directness	Overall Directness	Directly applicable
Overall bias and Directness	Risk of bias variation across outcomes	Not applicable

BREQ: brain injury rehabilitation trust regulation of emotions questionnaire; HSCL-25: Hopkins symptoms checklist-25; ITT: intention-to-treat; QOLIBRI: quality of life after brain injury

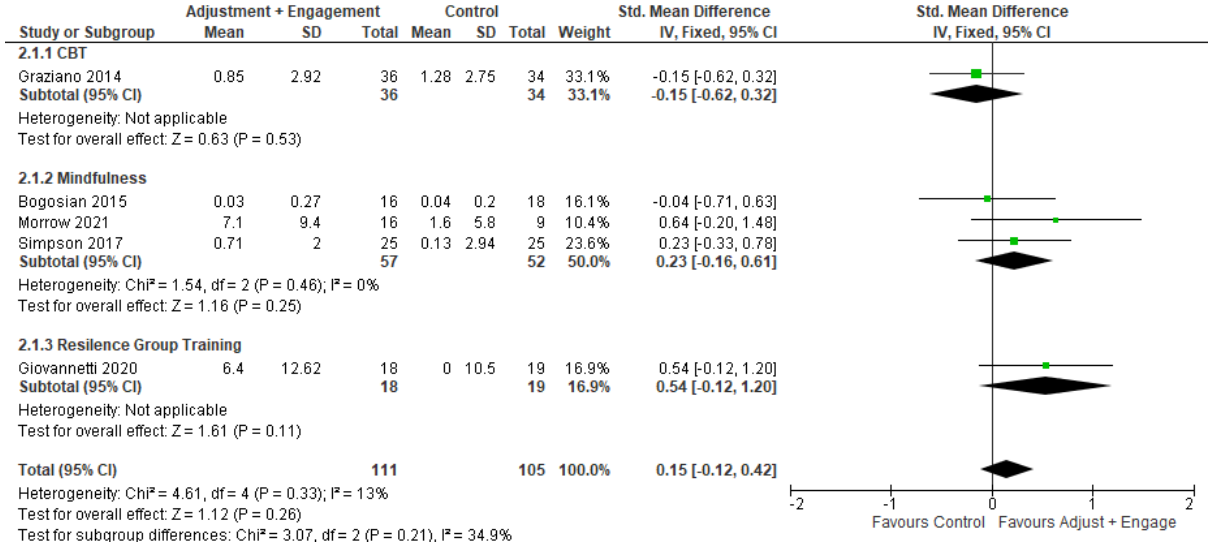
Appendix E Forest plots

Forest plots for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

This section includes forest plots only for outcomes that are meta-analysed. Outcomes from single studies are not presented here; the quality assessment for such outcomes is provided in the GRADE profiles in appendix F.

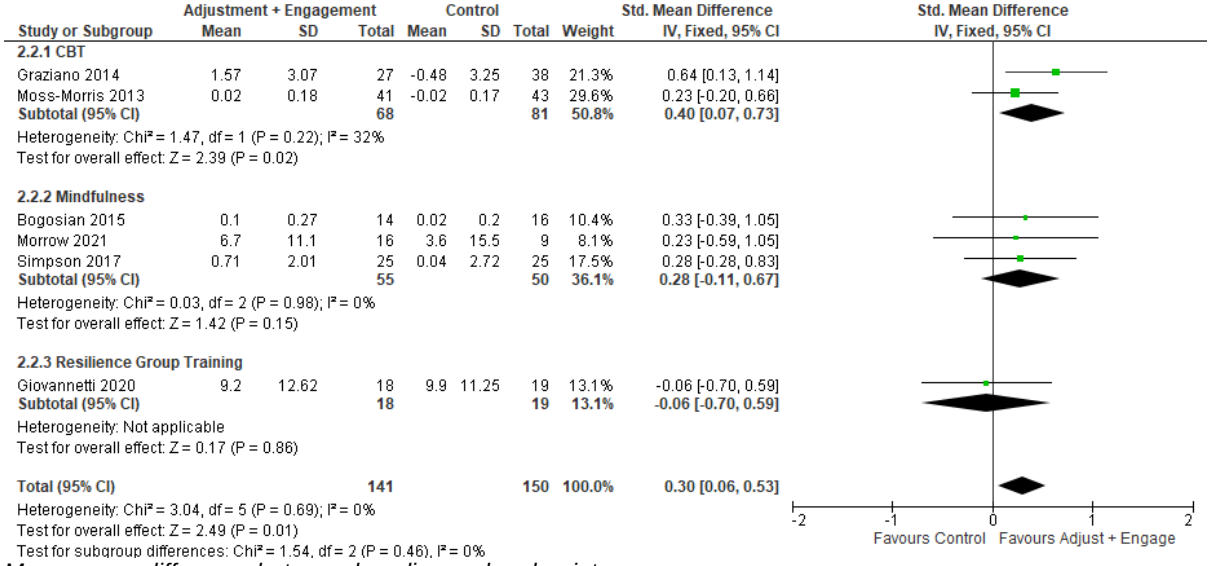
Interventions for Adjustment and Engagement versus Control in adults with multiple sclerosis

Figure 2: Physical and mental health related quality of life as measured by a validated scale at post-intervention



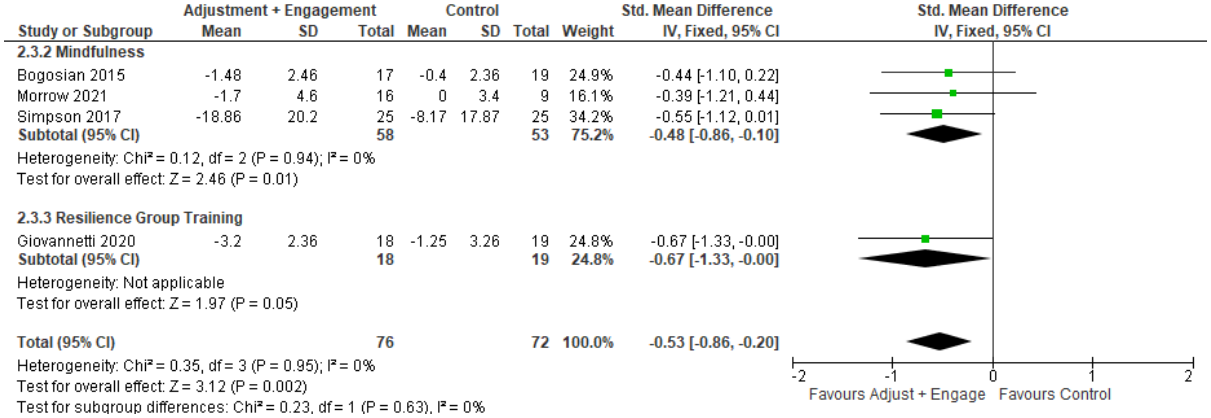
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 3: Physical and mental health related quality of life as measured by a validated scale at follow-up (ranging from 3-months to 12-months)



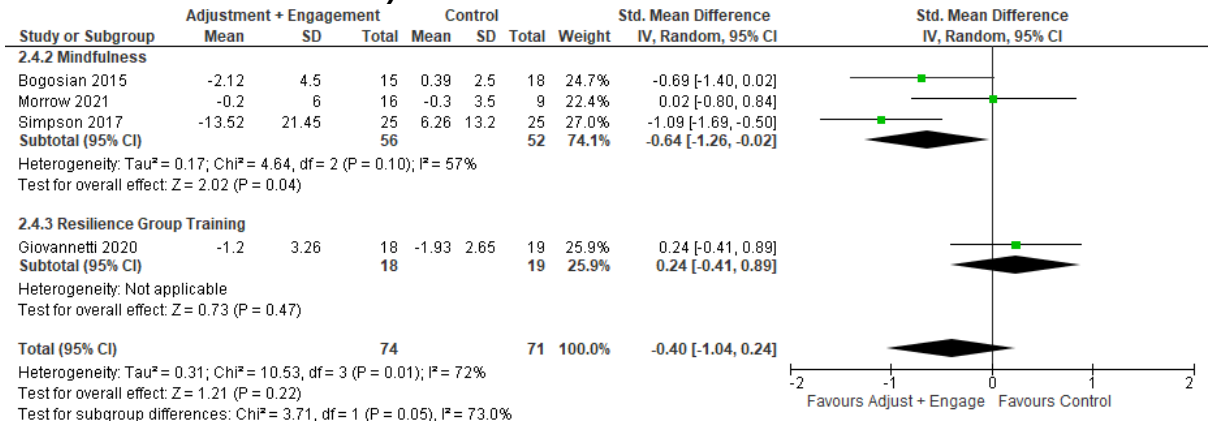
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 4: Anxiety symptoms as measured by a validated scale at post-intervention



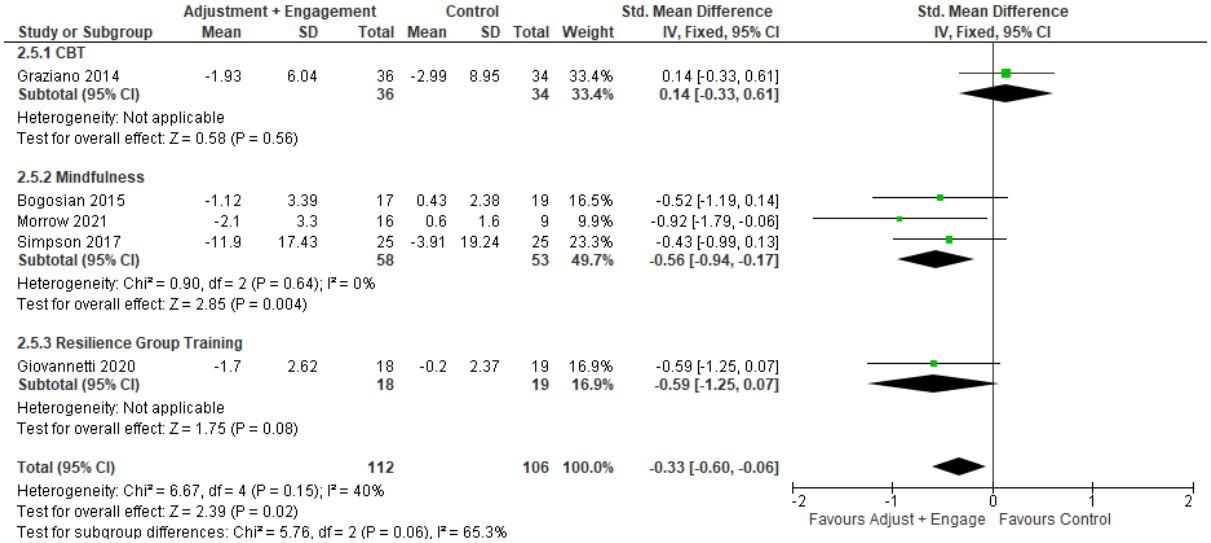
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 5: Anxiety symptoms as measured by a validated scale at follow-up (ranging from 3-months to 6-months)



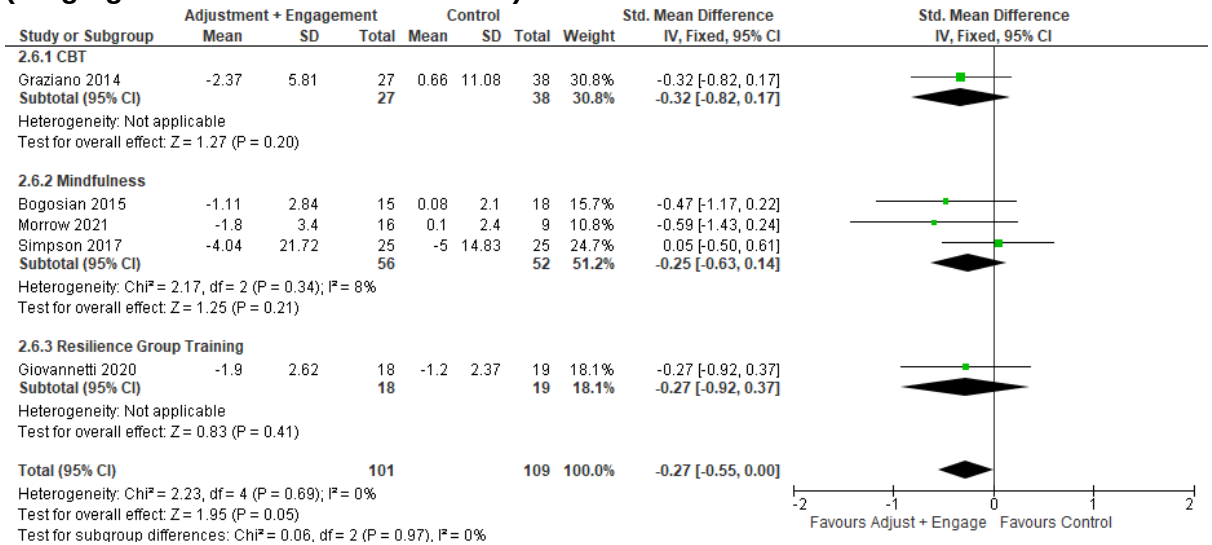
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 6: Depressive symptoms as measured by a validated scale at post-intervention



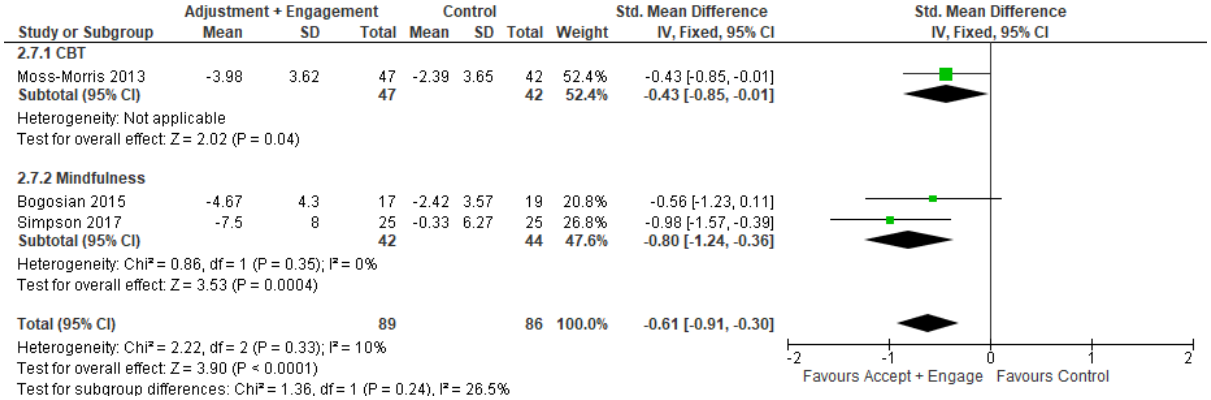
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 7: Depressive symptoms as measured by a validated scale at follow-up (ranging from 3-months to 6-months)



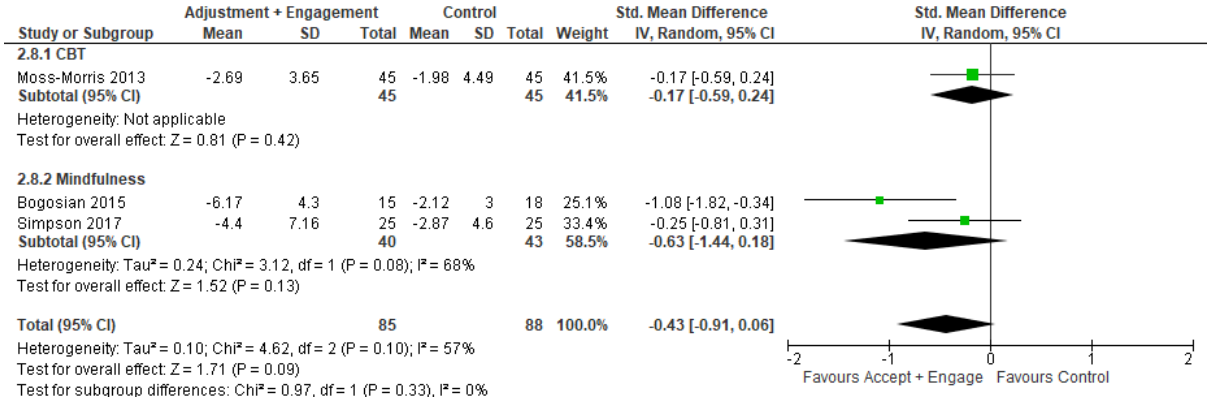
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 8: Distress as measured by a validated scale at post-intervention



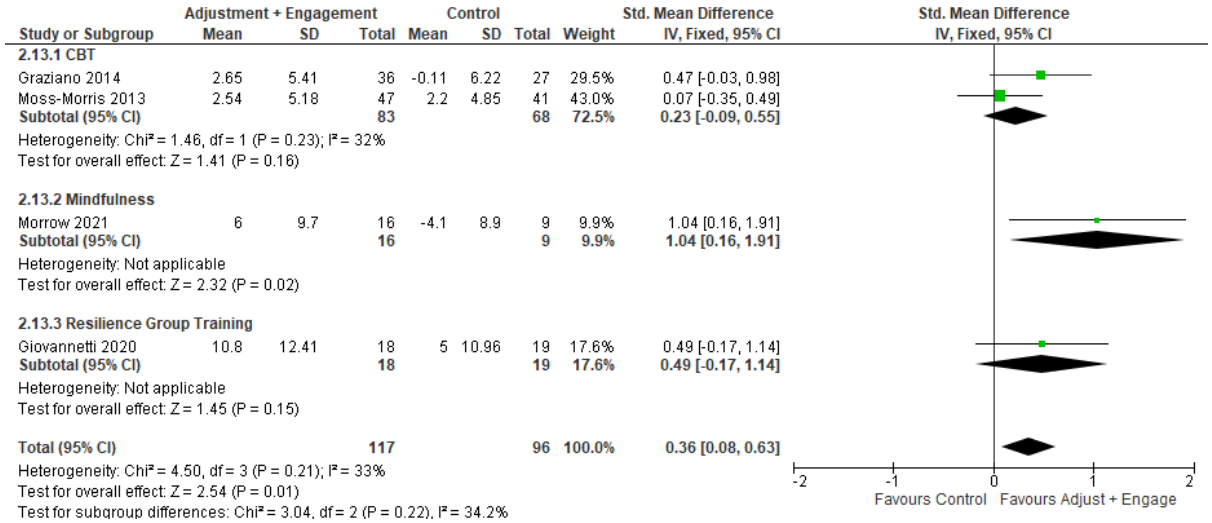
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 9: Distress as measured by a validated scale at follow-up (ranging from 3-months to 12-months)



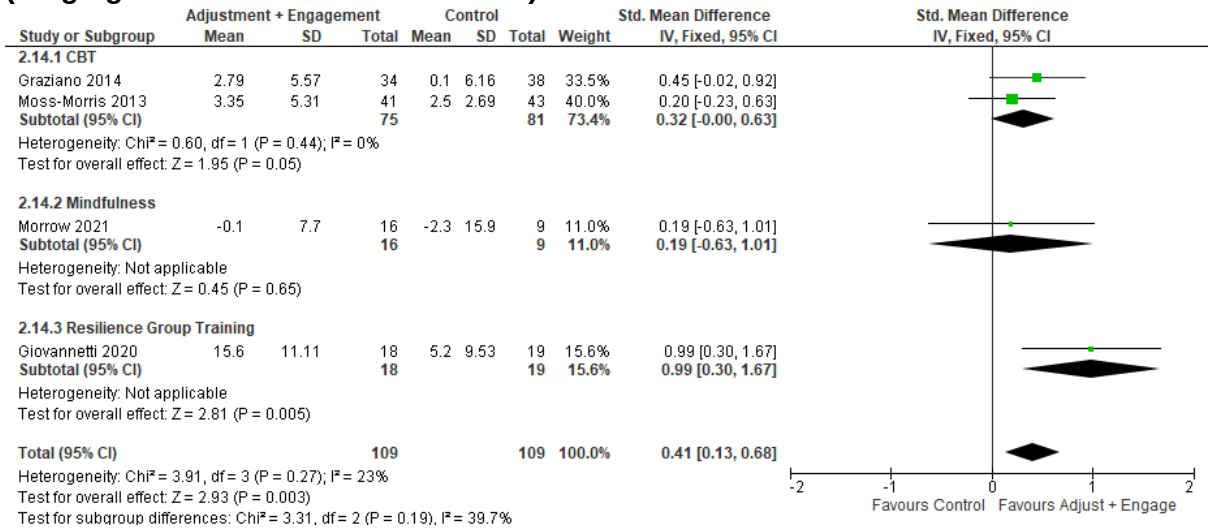
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 10: Coping and adjustment as measured by a validated scale at post-intervention



Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

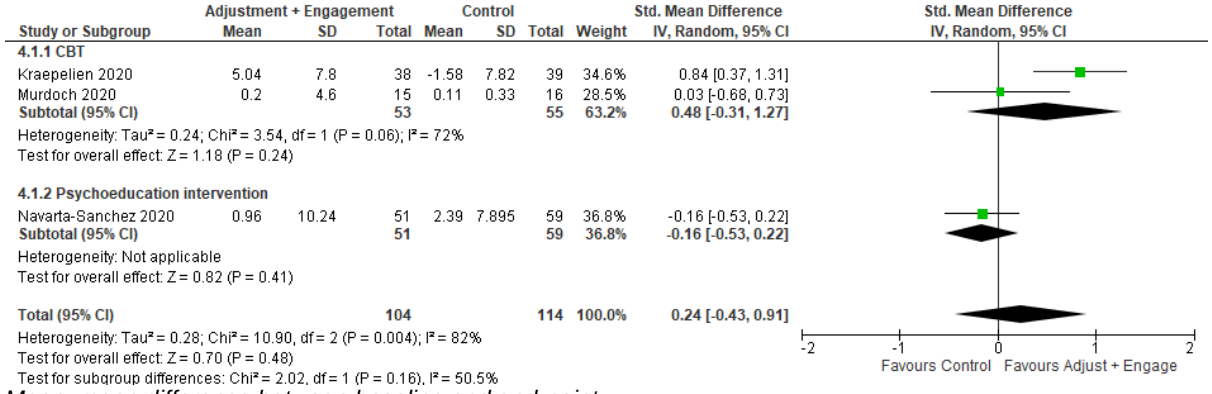
Figure 11: Coping and adjustment as measured by a validated scale at follow-up (ranging from 3-months to 12-months)



Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

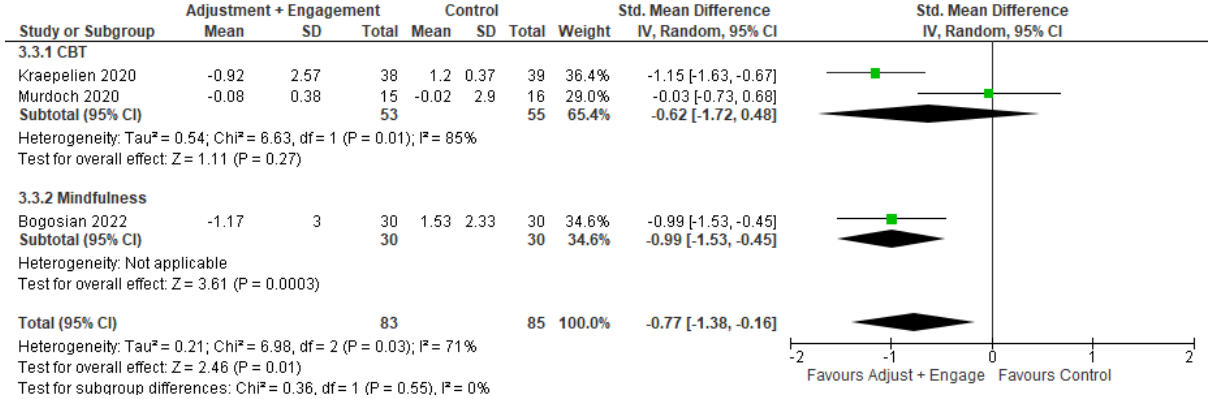
Interventions for Adjustment and Engagement versus Control in adults with Parkinson's disease

Figure 12: Physical and mental health related quality of life as measured by a validated scale at post-intervention



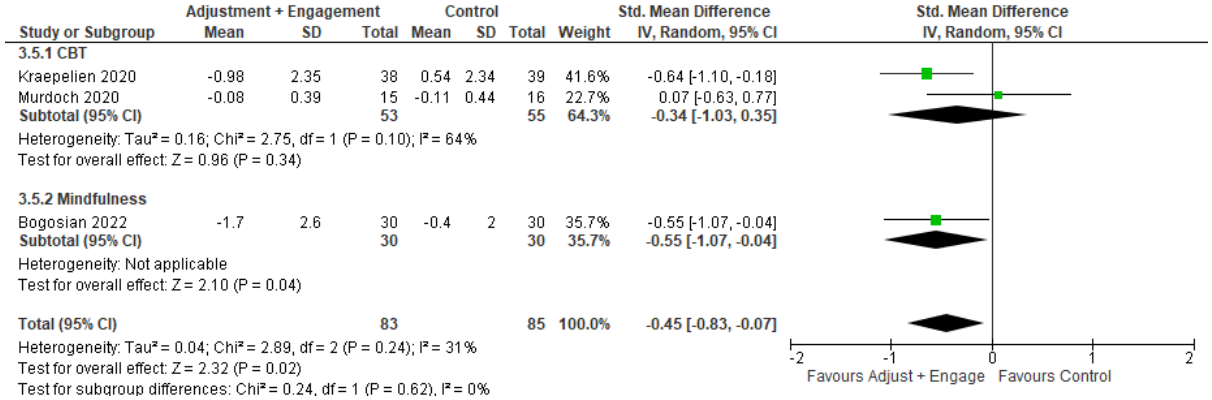
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 13: Anxiety symptoms as measured by a validated scale at post-intervention



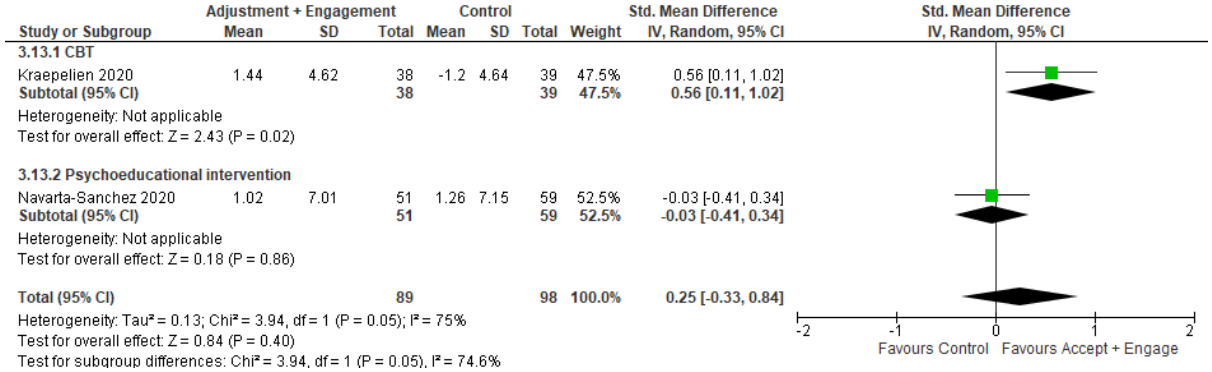
Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 14: Depressive symptoms as measured by a validated scale at post-intervention



Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Figure 15: Coping and adjustment as measured by a validated scale at post-intervention



Mean: mean difference between baseline and end-point
CI: confidence interval; IV: inverse variance

Appendix F GRADE

GRADE tables for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Table 8: Evidence profile for comparison between interventions for adjustment and engagement and control in adults with acquired brain injury

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions for Adjustment and Engagement	Control	Relative (95% CI)	Absolute		
Physical and mental health related quality of life as measured by QOLAS at post-intervention - CBT (Better indicated by higher values)												

1 (Potter 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	25	20	-	SMD 0.91 higher (0.29 to 1.53 higher)	LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at post-intervention – CBT (Better indicated by lower values)												
1 (Potter 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	25	20	-	SMD 0.06 lower (0.65 lower to 0.53 higher)	VERY LOW .	CRITICAL
Depressive symptoms as measured by HADS-D at post-intervention – CBT (Better indicated by lower values)												
1 (Potter 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[1]	none	25	20	-	SMD 0.22 lower (0.81 lower to 0.37 higher)	LOW	CRITICAL
Pain as measured by MPQ at post-intervention - CBT (Better indicated by lower values)												
1 (Potter 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[1]	none	25	20	-	SMD 0.12 lower (0.71 lower to 0.47 higher)	LOW	CRITICAL
Anger as measured by STAXI-2 at post-intervention - CBT (Better indicated by lower values)												
1 (Potter 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[1]	none	25	20	-	SMD 0.3 lower (0.9 lower to 0.29 higher)	LOW	CRITICAL

CBT: cognitive behavioural therapy; CI: confidence interval; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; MPQ: McGill pain questionnaire; QOLAS: quality of life assessment schedule; SMD: standardised mean difference; STAXI-2: state-trait anger expression inventory-2
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)
3 95% CI crosses 2 MIDs (for SMD +/-0.5)

Table 9: Evidence profile for comparison between interventions for adjustment and engagement and control in adults with acquired peripheral nerve disorders

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Interventions for Adjustment and Engagement**	**Control**	**Relative (95% CI)**	**Absolute**		
Depressive symptoms as measured by PHQ-9 severity at 3-months follow-up - Mindfulness (Better indicated by lower values)												

1 (Nathan 2017)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	29	32	-	SMD 1.03 lower (1.56 to 0.5 lower)*	LOW	CRITICAL
Distress as measured by PSS at 3-months follow-up - Mindfulness (Better indicated by lower values)												
1 (Nathan 2017)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	29	32	-	SMD 0.86 lower (1.38 to 0.33 lower)*	LOW	CRITICAL
Pain as measured by BPI severity at 3-months follow-up - Mindfulness (Better indicated by lower values)												
1 (Nathan 2017)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	29	32	-	SMD 1.2 lower (1.75 to 0.66 lower)*	MODERATE	CRITICAL

**Sample size in intervention arm adjusted for clustering using intercluster correlation coefficient=0.05 as referenced in the study*
BPI: brief pain inventory; CI: confidence interval; PHQ-9: patient health questionnaire-9; PSS: perceived stress scale; SMD: standardised mean difference
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)

Table 10: Evidence profile for comparison between interventions for adjustment and engagement and control in adults with multiple sclerosis

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Interventions for Adjustment and Engagement**	**Control**	**Relative (95% CI)**	**Absolute**		
Physical and mental health related quality of life as measured by a validated scale at post-intervention (Better indicated by higher values)												
5*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	111	105	-	SMD 0.15 higher (0.12 lower to 0.42 higher)	MODERATE	CRITICAL
Physical and mental health related quality of life as measured by EQ-5D at post-intervention - CBT (Better indicated by higher values)												

1 (Graziano 2014)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	36	34	-	SMD 0.15 lower (0.62 lower to 0.32 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by a validated scale at post-intervention - Mindfulness (Better indicated by higher values)												
3*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	57	52	-	SMD 0.23 higher (0.16 lower to 0.61 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by MSQoL-54 at post-intervention - Resilience Group Training (Better indicated by higher values)												
1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.54 higher (0.12 lower to 1.2 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by MSIS-29 at post-intervention – Mindfulness (Better indicated by higher values)												
1 (Sesel 2022)**	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	58	60	-	SMD 0.5 higher (0.14 to 0.85 higher)	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by MSQOL-54 at post-intervention – Mindfulness (Better indicated by higher values)												
1 (Cavalera 2019)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	54	67	-	F-value=4.68, p-value=0.033[5]	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by a validated scale at follow-up (ranging from 3-months to 12-months) (Better indicated by higher values)												
6*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	141	150	-	SMD 0.3 higher (0.06 to 0.53 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by a validated scale at follow-up (ranging from 6-months to 12-months) - CBT (Better indicated by higher values)												
2*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	68	81	-	SMD 0.4 higher (0.07 to 0.73 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by a validated scale at follow-up (ranging from 3-months to 6-months) - Mindfulness (Better indicated by higher values)												
3*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	55	50	-	SMD 0.28 higher (0.11 lower to 0.67 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by MSQoL-54 at 3-months follow-up - Resilience Group Training (Better indicated by higher values)												

1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[6]	none	18	19	-	SMD 0.06 lower (0.7 lower to 0.59 higher)	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by MSQOL-54 at 6-months follow-up – Mindfulness (Better indicated by higher values)												
1 (Cavalera 2019)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	54	67	-	F-value=0.018, p-value=0.89[7]	VERY LOW	CRITICAL
Anxiety symptoms as measured by a validated scale at post-intervention (Better indicated by lower values)												
4*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	76	72	-	SMD 0.53 lower (0.86 to 0.2 lower)	LOW	CRITICAL
Anxiety symptoms as measured by a validated scale at post-intervention – Mindfulness (Better indicated by lower values)												
3*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	58	53	-	SMD 0.48 lower (0.86 to 0.1 lower)	LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at post-intervention - Resilience Group Training (Better indicated by lower values)												
1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.67 lower (1.33 lower to 0 lower)	LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at post-intervention – Mindfulness (Better indicated by higher values)												
1 (Cavalera 2019)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	54	67	-	F-value=3.96, p-value=0.049[5]	VERY LOW	CRITICAL
Anxiety symptoms as measured by a validated scale at follow-up (ranging from 3-months to 6-months) (Better indicated by lower values)												
4*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	74	71	-	SMD 0.40 lower (1.04 lower to 0.24 higher)	LOW	CRITICAL
Anxiety symptoms as measured by a validated scale at follow-up (ranging from 3-months to 6-months) - Mindfulness (Better indicated by lower values)												
3*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	56	52	-	SMD 0.64 lower (1.26 to 0.02 lower)	LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at 3-months follow-up - Resilience Group Training (Better indicated by lower values)												

1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.24 higher (0.41 lower to 0.89 higher)	LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at 6-months follow-up – Mindfulness (Better indicated by higher values)												
1 (Cavalera 2019)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	54	67	-	F-value=1.03, p-value=0.31[7]	VERY LOW	CRITICAL
Depressive symptoms as measured by a validated scale at post-intervention (Better indicated by lower values)												
5*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	112	106	-	SMD 0.33 lower (0.6 to 0.06 lower)	LOW	CRITICAL
Depressive symptoms as measured by CES-D at post-intervention - CBT (Better indicated by lower values)												
1 (Graziano 2014)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	36	34	-	SMD 0.14 higher (0.33 lower to 0.61 higher)	LOW	CRITICAL
Depressive symptoms as measured by a validated scale at post-intervention - Mindfulness (Better indicated by lower values)												
3*	randomised trials	serious[2]	no serious inconsistency	no serious indirectness	serious[2]	none	58	53	-	SMD 0.56 lower (0.94 to 0.17 lower)	LOW	CRITICAL
Depressive symptoms as measured by HADS-D at post-intervention - Resilience Group Training (Better indicated by lower values)												
1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.59 lower (1.25 lower to 0.07 higher)	LOW	CRITICAL
Depressive symptoms as measured by CES-D at post-intervention – Mindfulness (Better indicated by lower values)												
1 (Sesel 2022)**	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	serious[2]	none	58	60	-	SMD 0.39 lower (0.742 to 0.034 lower)	VERY LOW	CRITICAL
Depressive symptoms as measured by HADS-D at post-intervention – Mindfulness (Better indicated by higher values)												
1 (Cavalera 2019)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	54	67	-	F-value=5.56, p-value=0.02[5]	VERY LOW	CRITICAL
Depressive symptoms as measured by a validated scale at follow-up (ranging from 3-months to 6-months) (Better indicated by lower values)												

5*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	101	109	-	SMD 0.27 lower (0.55 lower to 0 higher)	LOW	CRITICAL
Depressive symptoms as measured by CES-D at 6-months follow-up - CBT (Better indicated by lower values)												
1 (Graziano 2014)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	27	38	-	SMD 0.32 lower (0.82 lower to 0.17 higher)	LOW	CRITICAL
Depressive symptoms as measured by a validated scale at follow-up (ranging from 3-months to 6-months) - Mindfulness (Better indicated by lower values)												
3*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	56	52	-	SMD 0.25 lower (0.63 lower to 0.14 higher)	LOW	CRITICAL
Depressive symptoms as measured by HADS-D at 3-months follow-up - Resilience Group Training (Better indicated by lower values)												
1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.27 lower (0.92 lower to 0.37 higher)	LOW	CRITICAL
Depressive symptoms as measured by HADS-D at 6-months follow-up – Mindfulness (Better indicated by higher values)												
1 (Cavalera 2019)	randomised trials	very serious[3]	no serious inconsistency	no serious indirectness	very serious[4]	none	54	67	-	F-value=0.17, p-value=0.68[7]	VERY LOW	CRITICAL
Distress as measured by a validated scale at post-intervention (Better indicated by lower values)												
3*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	89	86	-	SMD 0.61 lower (0.91 to 0.3 lower)	LOW	CRITICAL
Distress as measured by GHQ-Distress at post-intervention - CBT (Better indicated by lower values)												
1 (Moss-Morris 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	47	42	-	SMD 0.43 lower (0.85 to 0.01 lower)	LOW	CRITICAL
Distress as measured by a validated scale at post-intervention - Mindfulness (Better indicated by lower values)												
2*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	42	44	-	SMD 0.8 lower (1.24 to 0.36 lower)	LOW	CRITICAL

Distress as measured by a validated scale at follow-up (ranging from 3-months to 12-months) (Better indicated by lower values)												
3*	randomised trials	serious[1]	serious[8]	no serious indirectness	serious[2]	none	85	88	-	SMD 0.43 lower (0.91 lower to 0.06 higher)	VERY LOW	CRITICAL
Distress as measured by GHQ-Distress at 12-month follow-up - CBT (Better indicated by lower values)												
1 (Moss-Morris 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	45	45	-	SMD 0.17 lower (0.59 lower to 0.24 higher)	LOW	CRITICAL
Distress as measured by a validated scale at 3-months follow-up - Mindfulness (Better indicated by lower values)												
2*	randomised trials	serious[1]	serious[8]	no serious indirectness	serious[2]	none	40	43	-	SMD 0.63 lower (1.44 lower to 0.18 higher)	VERY LOW	CRITICAL
Psychological Well-Being as measured by PANAS at post-intervention - CBT (Better indicated by higher values)												
1 (Graziano 2014)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	36	34	-	SMD 0.27 lower (0.74 lower to 0.2 higher)	LOW	CRITICAL
Psychological Well-being as measured by PANAS at 6-months follow-up - CBT (Better indicated by higher values)												
1 (Graziano 2014)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	27	38	-	SMD 0.1 higher (0.4 lower to 0.59 higher)	LOW	CRITICAL
Coping and adjustment as measured by a validated scale at post-intervention (Better indicated by higher values)												
4*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	117	96	-	SMD 0.36 higher (0.08 to 0.63 higher)	LOW	CRITICAL
Coping and adjustment as measured by a validated scale at post-intervention - CBT (Better indicated by higher values)												
2*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	83	68	-	SMD 0.23 higher (0.09 lower to 0.55 higher)	LOW	CRITICAL
Coping and adjustment as measured by a validated scale at post-intervention - Mindfulness (Better indicated by higher values)												

1 (Morrow 2021)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	16	9	-	SMD 1.04 higher (0.16 to 1.91 higher)	LOW	CRITICAL
Coping and adjustment as measured by CD-RISC 25 at post-intervention - Resilience Group Training (Better indicated by higher values)												
1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.49 higher (0.17 lower to 1.14 higher)	LOW	CRITICAL
Coping and adjustment as measured by a validated scale at follow-up (ranging from 3-months to 12-months) (Better indicated by lower values)												
4*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	109	109	-	SMD 0.41 higher (0.13 to 0.68 higher)	LOW	CRITICAL
Coping and adjustment as measured by a validated scale at follow-up (ranging from 6-months to 12-months) - CBT (Better indicated by higher values)												
2*	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	75	81	-	SMD 0.32 higher (0 lower to 0.63 higher)	LOW	CRITICAL
Coping and adjustment as measured by a validated scale at 6-months follow-up - Mindfulness (Better indicated by higher values)												
1 (Morrow 2021)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[5]	none	16	9	-	SMD 0.19 higher (0.63 lower to 1.01 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by CD-RISC 25 at 3-months follow-up - Resilience Group Training (Better indicated by higher values)												
1 (Giovannetti 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	18	19	-	SMD 0.99 higher (0.3 to 1.67 higher)	LOW	CRITICAL

CD-RISC 25: Connor-Davidson resilience scale; CES-D: Centre for Epidemiologic Studies depression scale; CI: confidence interval; EQ-5D: euroqol-5 dimension; GHQ-Distress: general health questionnaire-Ddstress; HADS-A: hospital anxiety and depression scale-anxiety; HADS-D: hospital anxiety and depression scale-depression; MSIS-29: multiple sclerosis impact scale-29 items; PANAS: positive affect negative affect schedule; SMD: standardised mean difference; STAXI-2: state-trait anger expression inventory-2
**See corresponding forest plot*
***Sesel 2022 reported the overall results as Cohen's d without changes in mean score and variance from baseline therefore unable to meta-analyse alongside the other studies.*
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)
3 Very serious risk of bias in the evidence contributing to the outcome
4 Very serious imprecision due to sample size <200
5 Differences between groups judged to be statistically significant according to author analysis, favouring adjustment and engagement group. Clinical significance could not be determined.
6 95% CI crosses 2 MIDs (for SMD +/-0.5)
7 Differences between groups judged to be non-statistically significant according to author analysis

8 Serious heterogeneity (I^2 >50%)

Table 11: Evidence profile for comparison between interventions for adjustment and engagement and control in adults with Parkinson's disease

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions for Adjustment and Engagement	Control	Relative (95% CI)	Absolute		
Physical and mental health related quality of life as measured by a validated scale at post-intervention (Better indicated by higher values)												
3*	randomised trials	very serious[1]	very serious[2]	no serious indirectness	serious[3]	none	104	114	-	SMD 0.24 higher (0.43 lower to 0.91 higher)	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by a validated scale at post-intervention - CBT (Better indicated by higher values)												
2*	randomised trials	very serious[1]	serious[4]	no serious indirectness	serious[3]	none	53	55	-	SMD 0.48 higher (0.31 lower to 1.27 higher)	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by PDQ-39 at post-intervention - Psychoeducation intervention (Better indicated by higher values)												
1 (Navarta-Sanchez 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	51	59	-	SMD 0.16 lower (0.53 lower to 0.22 higher)**	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by PDQ-39 at 6-months follow-up - Psychoeducation intervention (Better indicated by higher values)												
1 (Navarta-Sanchez 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	51	59	-	SMD 0.09 higher (0.41 lower to 0.59 higher)**	VERY LOW	CRITICAL
Anxiety symptoms as measured by a validated scale at post-intervention (Better indicated by lower values)												
3*	randomised trials	serious[5]	serious[4]	no serious indirectness	serious[3]	none	83	85	-	SMD 0.77 lower (1.38 to 0.16 lower)	VERY LOW	CRITICAL
Anxiety symptoms as measured by a validated scale at post-intervention - CBT (Better indicated by lower values)												

2*	randomised trials	very serious[1]	very serious[5]	no serious indirectness	serious[3]	none	53	55	-	SMD 0.62 lower (1.72 lower to 0.48 higher)	VERY LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at post-intervention - Mindfulness (Better indicated by lower values)												
1 (Bogosian 2022)	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	serious[3]	none	30	30	-	SMD 0.99 lower (1.53 to 0.45 lower)	LOW	CRITICAL
Anxiety symptoms as measured by HADS-A at 20-weeks follow-up - Mindfulness (Better indicated by lower values)												
1 (Bogosian 2022)	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	serious[3]	none	30	30	-	SMD 0.06 lower (0.57 lower to 0.44 higher)	LOW	CRITICAL
Depressive symptoms as measured by a validated scale at post-intervention (Better indicated by lower values)												
3*	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	83	85	-	SMD 0.45 lower (0.83 to 0.07 lower)	VERY LOW	CRITICAL
Depressive symptoms as measured by a validated scale at post-intervention - CBT (Better indicated by lower values)												
2*	randomised trials	very serious[1]	serious[4]	no serious indirectness	serious[3]	none	53	55	-	SMD 0.34 lower (1.03 lower to 0.35 higher)	VERY LOW	CRITICAL
Depressive symptoms as measured by HADS-D at post-intervention - Mindfulness (Better indicated by lower values)												
1 (Bogosian 2022)	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	serious[3]	none	30	30	-	SMD 0.55 lower (1.07 to 0.04 lower)	LOW	CRITICAL
Depressive symptoms as measured by HADS-D at 20-weeks follow-up - Mindfulness (Better indicated by lower values)												
1 (Bogosian 2022)	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	serious[3]	none	30	30	-	SMD 0.33 lower (0.84 lower to 0.18 higher)	LOW	CRITICAL
Pain as measured by BPI at post-intervention - Mindfulness (Better indicated by lower values)												
1 (Bogosian 2022)	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	serious[3]	none	30	30	-	SMD 0.18 lower (0.68 lower to 0.33 higher)	LOW	CRITICAL
Pain as measured by BPI at 20-weeks follow-up - Mindfulness (Better indicated by lower values)												
1 (Bogosian 2022)	randomised trials	serious[5]	no serious inconsistency	no serious indirectness	very serious[6]	none	30	30	-	SMD 0.01 lower (0.51 lower to 0.5 higher)	VERY LOW	CRITICAL

Coping and adjustment as measured by a validated scale at post-intervention (Better indicated by higher values)												
2*	randomised trials	serious[5]	serious[4]	no serious indirectness	serious[3]	none	89	98	-	SMD 0.25 higher (0.33 lower to 0.84 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by a validated scale at post-intervention - CBT (Better indicated by higher values)												
1 (Kraepelien 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	38	39	-	SMD 0.56 higher (0.11 to 1.02 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by BRIEF-COPE at post-intervention - Psychoeducational intervention (Better indicated by higher values)												
1 (Navarta-Sanchez 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	51	59	-	SMD 0.03 lower (0.41 lower to 0.34 higher)**	LOW	CRITICAL
Coping and adjustment as measured by BRIEF-COPE at 6-months follow-up - Psychoeducational intervention (Better indicated by higher values)												
1 (Navarta-Sanchez 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	51	59	-	SMD 0.04 lower (0.41 lower to 0.34 higher)**	LOW	CRITICAL
Carer Quality of Life as measured by SQLC at post-intervention - (Better indicated by higher values)												
1 (Navarta-Sanchez 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	37	53	-	SMD 0.13 higher (0.29 lower to 0.55 higher)**	VERY LOW	CRITICAL
Carer Quality of Life as measured by SQLC at 6-months follow-up - (Better indicated by higher values)												
1 (Navarta-Sanchez 2020)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[3]	none	37	53	-	SMD 0.27 higher (0.15 lower to 0.69 higher)**	VERY LOW	CRITICAL

BRIEF-COPE: coping orientation to problems experienced inventory; CI: confidence interval; HADS-A: hospital anxiety and depression scale -anxiety; HADS-D: hospital anxiety and depression scale - depression; PDQ-39: Parkinson's disease questionnaire – 39; SMD: standardised mean difference; SQLC: scale of quality of life of caregivers
**See corresponding forest plot*
***Sample size adjusted for clustering using intercluster correlation coefficient=0.05 as referenced in Nathan 2017*
1 Very serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 Very serious heterogeneity (I^2 >80%)
3 95% CI crosses 1 MID (for SMD +/-0.5)
4 Serious heterogeneity (I^2 >50%)
5 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
6 95% CI crosses 2 MIDs (for SMD +/-0.5)

Table 12: Evidence profile for comparison between interventions for adjustment and engagement and control in adults with functional neurological disorders

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions for Adjustment and Engagement	Control	Relative (95% CI)	Absolute		
Physical and mental health related quality of life as measured by EQ-5D at 12-months follow-up – Mindfulness (Better indicated by higher values)												
1 (Goldstein 2021)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	186	182	-	SMD 0.27 higher (0.06 to 0.47 higher)	MODERATE	CRITICAL
Anxiety symptoms as measured by GAD-7 at 12-months follow-up - Mindfulness (Better indicated by lower values)												
1 (Goldstein 2021)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	186	182	-	SMD 0.18 lower (0.37 lower to 0.01 higher)	MODERATE	CRITICAL
Depressive symptoms as measured by PHQ-9 at 12-months follow-up - Mindfulness (Better indicated by lower values)												
1 (Goldstein 2021)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	186	182	-	SMD 0.17 lower (0.37 lower to 0.03 higher)	MODERATE	CRITICAL
Distress as measured by Distress CORE-10 at 12-months follow-up - Mindfulness (Better indicated by lower values)												
1 (Goldstein 2021)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	186	182	-	SMD 0.25 lower (0.45 to 0.05 lower)	MODERATE	CRITICAL

CI: confidence interval; Distress CORE-10: distress clinical outcomes in routine evaluation-10; EQ-5D: euroqol-5 dimension; GAD-7: generalised anxiety disorder-7; PHQ-9: patient health questionnaire; SMD: standardised mean difference

1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2

Table 13: Evidence profile for comparison between interventions to improve relationships and control in children and young people with acquired brain injury

Quality assessment	No of patients	Effect	Quality	Importance

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions to Improve Relationships	Control	Relative (95% CI)	Absolute		
Behaviour change as measured by ECBI Intensity post-intervention (Better indicated by lower values)												
1 (Brown 2014)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	25	27	-	SMD 1.3 lower (1.9 to 0.7 lower)	LOW	CRITICAL
Behaviour change as measured by ECBI Problem post-intervention (Better indicated by lower values)												
1 (Brown 2014)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	25	27	-	SMD 1.09 lower (1.67 to 0.5 lower)	VERY LOW	CRITICAL
Behaviour change as measured by SDQ Emotional post-intervention (Better indicated by lower values)												
1 (Brown 2014)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	25	27	-	SMD 0.88 lower (1.45 to 0.31 lower)	VERY LOW	CRITICAL

CI: confidence interval; ECBI: Eyberg child behaviour inventory; SDQ: strengths and difficulty questionnaire; SMD: standardised mean difference
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)

Table 14: Evidence profile for comparison between interventions to improve motivation versus control in adults with acquired brain injury

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Interventions to Improve Motivation**	**Control**	**Relative (95% CI)**	**Absolute**		
Physical and mental health related quality of life as measured by QOLIBRI at post-intervention (Better indicated by higher values)												
1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.27 higher (0.22 lower to 0.76 higher)	LOW	CRITICAL
Physical and mental health related quality of life as measured by QOLIBRI at 6-months follow-up (Better indicated by higher values)												

1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.78 higher (0.27 to 1.29 higher)	LOW	CRITICAL
Anxiety symptoms as measured by HSCL-25-Anxiety at post-intervention (Better indicated by lower values)												
1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.1 higher (0.38 lower to 0.59 higher)	LOW	CRITICAL
Anxiety symptoms as measured by HSCL-25-Anxiety at 6-months follow-up (Better indicated by lower values)												
1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.02 higher (0.47 lower to 0.51 higher)	LOW	CRITICAL
Depressive symptoms as measured by HSCL-25-Depression at post-intervention (Better indicated by lower values)												
1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.37 lower (0.86 lower to 0.12 higher)	LOW	CRITICAL
Depressive symptoms as measured by HSCL-25-Depression at 6-months follow-up (Better indicated by lower values)												
1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.51 lower (1 to 0.01 lower)	LOW	CRITICAL
Coping and adjustment as measured by BREQ at post-intervention (Better indicated by higher values)												
1 (Tornas 2016)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.23 higher (0.26 lower to 0.73 higher)	LOW	CRITICAL
Coping and adjustment as measured by BREQ at 6-months follow-up (Better indicated by higher values)												
1 (Tornas 2016)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	31	34	-	SMD 0.42 higher (0.07 lower to 0.92 higher)	LOW	CRITICAL

BREQ: brain injury rehabilitation trust regulation of emotions questionnaire; CI: confidence interval; HSCL-25: Hopkins symptoms checklist-25; SMD: standardised mean difference; QOLIBRI: quality of life after brain injury
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)

Table 15: Evidence profile for comparison between interventions for adaptive dysfunction and behaviours that challenge others versus control in adults with acquired brain injury

Quality assessment	No of patients	Effect	Quality	Importance

No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions for Adaptive Dysfunction and Behaviours that Challenge Others	Control	Relative (95% CI)	Absolute		
Happiness as measured by AHI at 12-weeks follow-up (Better indicated by higher values)												
1 (Andrewes 2014)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	5	5	-	F-value=4.20; p-value=0.08[3]	VERY LOW	CRITICAL
Behaviour change as measured by OBS-CWS at 12-months follow-up (Better indicated by lower values)												
1 (Ponsford 2022)	randomised trials	serious[4]	no serious inconsistency	no serious indirectness	serious[5]	none	24	25	-	SMD 0.18 higher (0.38 lower to 0.75 higher)	LOW	CRITICAL

AHI: Steen happiness index; CI: confidence interval; OBS-CWS: overt behaviour scale−clinical weighted severity score; SMD: standardised mean difference
1 Very serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 Very serious imprecision due to sample size <200

3 Differences between groups judged to be non-statistically significant according to author analysis
4 Very serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
5 95% CI crosses 1 MID (for SMD +/-0.5)

Table 16: Evidence profile for comparison between interventions for adaptive dysfunction and behaviours that challenge others versus control in adults with Parkinson's disease

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Interventions for Adaptive Dysfunction and Behaviours that Challenge Others	Control	Relative (95% CI)	Absolute		
Anxiety symptoms as measured by BAI at 6-months follow-up (Better indicated by lower values)												
1 (Okai 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	22	13	-	SMD 0.86 lower (1.57 to 0.14 lower)	LOW	CRITICAL
Depressive symptoms as measured by BDI at 6-months follow-up (Better indicated by lower values)												

1 (Okai 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	22	13	-	SMD 1.88 lower (2.71 to 1.05 lower)	MODERATE	CRITICAL
Coping and adjustment as measured by WSAS at 6-months follow-up (Better indicated by higher values)												
1 (Okai 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	21	14	-	SMD 1.71 higher (0.91 to 2.51 higher)	MODERATE	CRITICAL
Behaviour change as measured by NPI at 6-months follow-up (Better indicated by lower values)												
1 (Okai 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	25	13	-	SMD 0.95 lower (1.66 to 0.24 lower)	LOW	CRITICAL
Behaviour change as measured by ICBSS at 6-months follow-up (Better indicated by lower values)												
1 (Okai 2013)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	19	12	-	SMD 0.92 lower (1.68 to 0.15 lower)	LOW	CRITICAL

BAI: Beck anxiety inventory; BDI: Beck depression inventory; CI: confidence interval; ICBSS: impulse control behaviour symptom scale; NPI: neuropsychiatric inventory; SMD: standardised mean difference; WSAS: work and social adjustment scale.
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)

Table 17: Evidence profile for comparison between creative therapies and control in adults with acquired brain injury

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Creative therapies**	**Control**	**Relative (95% CI)**	**Absolute**		
Physical and mental health related quality of life as measured by QOLIBRI at post-intervention (Better indicated by higher values)												
1 (Siponkoski 2022)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	20	18	-	SMD 0.23 higher (0.41 lower to 0.87 higher)	LOW	CRITICAL

Depressive symptoms as measured by BDI-II at post-intervention (Better indicated by lower values)												
1 (Siponkoski 2022)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	20	18	-	SMD 0.11 lower (0.75 lower to 0.53 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by BRIEF-A (self-report) at post-intervention (Better indicated by lower values)												
1 (Siponkoski 2022)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	20	18	-	SMD 0.22 lower (0.86 lower to 0.42 higher)	LOW	CRITICAL

BDI: beck depression inventory; BRIEF-A: behaviour rating inventory of executive function-adult version; CI: confidence interval; SMD: standardised mean difference; QOLIBRI: quality of life after brain injury
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)
3 95% CI crosses 2 MIDs (for SMD +/-0.5)

Table 18: Evidence profile for comparison between creative therapies and control in adults with acquired brain injury or acquired spinal cord injury

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	**Design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**	**Creative Therapies**	**Control**	**Relative (95% CI)**	**Absolute**		
Physical and mental health related quality of life as measured by SWLS at post-intervention (Better indicated by higher values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	15	16	-	SMD 0.79 higher (0.06 to 1.53 higher)	VERY LOW	CRITICAL
Physical and mental health related quality of life as measured by SWLS at 6-months follow-up (Better indicated by higher values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	very serious[3]	none	8	7	-	SMD 0.15 lower (1.17 lower to 0.87 higher)	VERY LOW	CRITICAL

Depressive symptoms as measured by PHQ-9 at post-intervention (Better indicated by lower values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	15	16	-	SMD 0.24 lower (0.95 lower to 0.46 higher)	VERY LOW	CRITICAL
Depressive symptoms as measured by PHQ-9 at 6-months follow-up (Better indicated by lower values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	8	7	-	SMD 0.99 lower (2.08 lower to 0.11 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by ERQ-Supp at post-intervention (Better indicated by lower values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	15	16	-	SMD 0.64 lower (1.37 lower to 0.08 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by ERQ-Reap at post-intervention (Better indicated by higher values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	15	16	-	SMD 0.39 higher (0.33 lower to 1.1 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by ERQ-Supp at 6-months follow-up (Better indicated by lower values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	8	7	-	SMD 0.56 lower (1.6 lower to 0.48 higher)	VERY LOW	CRITICAL
Coping and adjustment as measured by ERQ-Reap at 6-months follow-up (Better indicated by higher values)												
1 (Baker 2019)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	serious[2]	none	8	7	-	SMD 0.55 higher (0.49 lower to 1.59 higher)	VERY LOW	CRITICAL

CI: confidence interval; ERQ-Supp: emotion regulation questionnaire-suppression; ERQ-Reap: emotion regulation questionnaire-reappraisal; PHQ-9: patient health questionnaire-9; SMD: standardised mean difference; SWLS: satisfaction with life scale

1 Very serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 95% CI crosses 1 MID (for SMD +/-0.5)
3 95% CI crosses 2 MIDs (for SMD +/-0.5)

Table 19: Evidence profile for comparison between creative therapies and control in adults with multiple sclerosis

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Creative Therapies	Control	Relative (95% CI)	Absolute		
Depressive symptoms as measured by BDI at post-intervention (Better indicated by lower values)												
1 (Impellizzeri 2020)	randomised trials	serious[1]	no serious inconsistency	no serious indirectness	no serious imprecision	none	15	15	-	SMD 1.93 lower (2.82 to 1.05 lower)	MODERATE	CRITICAL

BDI: Beck depression inventory; CI: confidence interval; SMD: standardised mean difference
1 Serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2

Table 20: Evidence profile for comparison between creative therapies and control in adults with Parkinson's disease

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Creative Therapies	Control	Relative (95% CI)	Absolute		
Physical and mental health related quality of life as measured by PDQ-39 at post-intervention (Better indicated by lower values)												
1 (Pohl 2013)	randomised trials	very serious[1]	no serious inconsistency	no serious indirectness	very serious[2]	none	12	4	-	Change in mean difference from baseline to post-intervention: Creative Therapy: 3.6 lower (95% CI 6.8 lower to 0.6 higher)	VERY LOW	CRITICAL

										Control: 7.3 lower (95% CI 11.9 lower to 12.8 higher) p-value=0.47[3]		

CI: confidence interval; PDQ-39: Parkinson's disease questionnaire–39
1 Very serious risk of bias in the evidence contributing to the outcomes as per Cochrane RoB2
2 Very serious imprecision due to sample size <200
3 Differences between groups judged to be non-statistically significant according to author analysis

Appendix G Economic evidence study selection

Economic evidence study selection for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Please see Supplement 2 for details on study selection

Appendix H Economic evidence tables

Economic evidence tables for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Table 21: Economic evidence table for mindfulness intervention in adults with multiple sclerosis

Study country and type	Intervention and comparator	Study population, design and data sources	Costs and outcomes (descriptions and values)	Results	Comments
Bogosian 2015 UK Cost-utility analysis Source of funding: MS Society UK	Mindfulness intervention - 8 hour-long sessions over eight weeks via Skype video conferences - 5 participants per group - based on the mindfulness-based cognitive therapy - included mindfulness practice, discussions, homework, and daily home practice - facilitated by a health psychologist with supervision from a clinical psychologist and expert mindfulness practitioner Comparator: Usual care by primary and secondary care services, with no routine care for distress	People with progressive multiple sclerosis, the mean age of 52.7, and the median time since diagnosis of 12 years Economic evaluation alongside an RCT (Bogosian 2015) Source of baseline data: RCT (N=40) Source of effectiveness data: RCT (N=40) Source of resource use data: RCT study participants (N=40) Source of unit cost data: National sources (PSSRU)	Costs: Unspecified hospital and social care costs Mean difference in costs per participant over 3 months: −£720 (95% CI: –£2,636 to £1,196) Primary measure of outcome: QALYs (EQ-5D-3L) Mean difference in QALYs per participant over 3 months: –0.006 (95% CI: −0.039 to 0.027)	ICERs: £120,000 saved per QALY lost Probability of being cost-effective: 90% at a threshold of £20,000 per QALY gained Subgroup analysis: None Sensitivity analysis: None	Perspective: NHS and PSS Currency: UK£ Cost year: 2012/13 Time horizon: 3 months Discounting: NA Applicability: Directly Limitations: Potentially serious

CI: confidence interval; EQ-5D-3L: euroqol-5 dimension-3 level; ICER: incremental cost-effectiveness ratio; MS: multiple sclerosis; PSSRU: personal social services research unit; QALY: quality-adjusted life year; RCT: randomised controlled trial

Table 22: Economic evidence tables for psychological adjustment intervention in adults with multiple sclerosis

Study country and type	Intervention and comparator	Study population, design and data sources	Costs and outcomes (descriptions and values)	Results	Comments
Humphreys 2013 UK Cost-utility analysis Source of funding: There was no specific funding.	Psychological adjustment group - six group sessions teaching people to recognise symptoms of distress and introducing them to strategies to improve their mood Comparator: Usual care, which included routinely provided rehabilitation care. Usual care did not include psychological interventions. However, people were offered the opportunity to attend adjustment intervention after the study.	People with multiple sclerosis, the majority with relapsing-remitting, mean age (years): 44.5 - intervention 47.5 - usual care Years since diagnosis: 9.2 - intervention 10.5 - usual care Economic evaluation alongside an RCT (RCT was excluded from clinical effectiveness review due to RCT being pre-2013) Source of baseline data: RCT (N=151) Source of effectiveness data: RCT (N=129) Source of resource use data: RCT study participants (N=151) Source of unit cost data: National sources (NHS National Tariff, PSSRU, BNF)	Costs: General practitioner, nurse, physiotherapy, counselling, telephone consultation, specialist nurse, occupational therapy, acupuncture, chiropodist, alcohol health worker, cognitive behaviour therapy, mental health nurse, midwife, social worker, speech therapist, speech therapist home visit, midwife home visit, physiotherapy home visit, occupational therapy home visit, nurse home visit, general practitioner home visit, medication Mean cost per participant over 8 months: Intervention: £765 Control: £1,12, Difference: −£360 (95% CI: −£842, £122), p=NS Primary measure of outcome: QALYs (EQ-5D-3L)	ICERs: Intervention dominant (lower cost and higher QALYs), however non-significant differences in costs and outcomes Probability of being cost-effective: Not reported using QALYs as an outcome measure Subgroup analysis: NR Sensitivity analysis: NR	Perspective: NHS and PSS Currency: UK£ Cost year: 2009 Time horizon: 8 months Discounting: NA Applicability: Directly Limitations: Potentially serious Other comments: - QALYs were not reported by the authors but were calculated using the EQ-5D-3L scores at different follow-up time points. - The analysis included high-cost disease-modifying drugs, which would not be affected by the mood of participants, and their use was higher at baseline in the intervention group. - Similar findings using Beck depression inventory scores as an outcome measure; however, the difference favouring the intervention was significant.

Study country and type	Intervention and comparator	Study population, design and data sources	Costs and outcomes (descriptions and values)	Results	Comments
			Mean QALYs per participant over 8 months: Intervention: 0.357 Control: 0.345 Difference: 0.011[1]		

BNF: British national formulary; EQ-5D-3L: EuroQol-5 dimension-3 level; ICER: incremental cost-effectiveness ratio; NHS: National Health Service; NS: not significant; ; NR: not reported; PSSRU: personal social services research unit; QALY: quality-adjusted life year; RCT: randomised controlled trial

1 Since EQ-5D-3L scores did not differ significantly at any time point, QALY difference is also likely to be insignificant.

Table 23: Economic evidence table for cognitive behavioural intervention in adults with multiple sclerosis

Study country and type	Intervention and comparator	Study population, design and data sources	Costs and outcomes (descriptions and values)	Results	Comments
Mosweu 2017 UK Cost-utility analysis Source of funding: MS Society in the UK	Cognitive behavioural therapy (CBT) - eight sessions of nurse-led CBT over ten weeks - a combination of two face-to-face meetings and six telephone calls Comparator: Supportive listening (SL)	People with multiple sclerosis Mean age (years): 40.3 - CBT 43.1 - SL Time since diagnosis was not reported. Economic evaluation alongside an RCT (Moss-Morris 2013) Source of baseline data: RCT (N=94)	Costs: General practitioner, neurologist, other doctors (including dentist), multiple sclerosis nurse, pharmacist, therapist, physiotherapy, alternative therapy, other community-based professionals, medicine, hospital-based services (inpatient stay, A&E, investigations [blood test, MRI, x-ray, CT/CAT scans, EEG] Mean cost per participant over 12 months: Intervention: £7,331 Control: £5,026 Difference: £1,610 (95% CI: −£187 to £3,771)	ICERs: £303,774 per QALY gained £821 per one point improvement on GHQ-12 scale Probability of intervention being cost-effective: 9% at a threshold of £20,000 per QALY Subgroup analysis: In people showing clinical levels of distress at baseline (i.e., who scored three and above on GHQ-12) the intervention resulted in	Perspective: NHS and PSS Currency: UK£ Cost year: 2008/09 Time horizon: 12 months Discounting: NA Applicability: Directly Limitations: Potentially serious

Study country and type	Intervention and comparator	Study population, design and data sources	Costs and outcomes (descriptions and values)	Results	Comments
		Source of effectiveness data: RCT (N=94) Source of resource use data: RCT (N=84) Source of unit cost data: National sources (PSSRU, NHS Reference costs, BNF)	Primary measure of outcome: GHQ-12 scores, QALYs (EQ-5D-3L) Mean change in GHQ-12 scores per participant over 12 months: Intervention: -2.69 Control: -1.97 Difference: -1.96 (95% CI: −5.41 to −1.05) Mean QALYs per participant over 12 months: Intervention: 0.66 Control: 0.63 Difference: 0.005 (95% CI: −0.059 to 0.103)	an ICER of £126,111 per QALY gained and £320 per point improvement on the GHQ-12 scale Sensitivity analysis: None	

A&E: accident and emergency; BNF: British national formulary; CBT: cognitive behavioural therapy; CI: confidence interval; CT/CAT: computed tomography/computerised axial tomography; EEG: electroencephalogram; EQ-5D-3L: euroqol-5 dimension-3 level; GHQ-12: general health questionnaire-12; ICER: incremental cost-effectiveness ratio; MRI: magnetic resonance imaging; MS: multiple sclerosis; NHS: National Health Service; N: sample size; NA: not applicable; PSS: personal social services; PSSRU: personal social services research unit; QALY: quality-adjusted life year; RCT: randomised controlled trial; SL: supportive listening

Appendix I Economic analysis

Economic analysis for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

No economic analysis was conducted for this review question.

Appendix J – Excluded studies

Excluded studies for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Excluded effectiveness studies

Table 24: Excluded studies and reasons for their exclusion

Study	Reason for exclusion
Aboulafia-Brakha, Tatiana and Ptak, Radek (2016) Effects of group psychotherapy on anger management following acquired brain injury. Brain injury 30(9): 1121-30	- Comparator Comparator same as intervention in reverse order, not included as comparison in protocol.
Advocat, Jenny, Enticott, Joanne, Vandenberg, Brooke et al. (2016) The effects of a mindfulness-based lifestyle program for adults with Parkinson's disease: a mixed methods, wait list controlled randomised control study. BMC neurology 16: 166	- Intervention Mindfulness-based lifestyle programme, not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Agland, Susan, Lydon, Amanda, Shaw, Sally et al. (2018) Can a stress management programme reduce stress and improve quality of life in people diagnosed with multiple sclerosis?. Multiple sclerosis journal - experimental, translational and clinical 4(4): 2055217318813179	- Intervention Stress management programme not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Aguilar, Jessica M, Cassedy, Amy E, Shultz, Emily L et al. (2019) A Comparison of 2 Online Parent Skills Training Interventions for Early Childhood Brain Injury: Improvements in Internalizing and Executive Function Behaviors. The Journal of head trauma rehabilitation 34(2): 65-76	- Country Study conducted in the US.
Alschuler, Kevin N, Arewasikporn, Anne, Nelson, Ian K et al. (2018) Promoting resilience in individuals aging with multiple sclerosis: Results from a pilot randomized controlled trial. Rehabilitation psychology 63(3): 338-348	- Country Study conducted in the US.
Antonini, Tanya N, Raj, Stacey P, Oberjohn, Karen S et al. (2014) A pilot randomized trial of an online parenting skills program for pediatric traumatic brain injury: improvements in parenting and child behavior. Behavior therapy 45(4): 455-68	- Country Study conducted in the US.
Askari, M, Radmehr, H, Mohammadi, H et al. (2017) The effectiveness of mindfulness-based cognitive therapy on increasing the quality of life and reducing psychological	- Country Study conducted in Iran.

Study	Reason for exclusion
symptoms in patients with multiple sclerosis. Journal of isfahan medical school 34(410): 1487-1495	
Audrit, Helene, Beauchamp, Miriam H, Tinawi, Simon et al. (2021) Multidimensional Psychoeducative and Counseling Intervention (SAAM) for Symptomatic Patients With Mild Traumatic Brain Injury: A Pilot Randomized Controlled Trial. The Journal of head trauma rehabilitation 36(4): e249-e261	- Population Participants' condition does not meet the guideline definition of chronic (3 months since diagnosis or injury). Majority of participants both recruited and finished intervention within 3 months of traumatic brain injury.
Averill, Alyssa J; Kasarskis, Edward J; Segerstrom, Suzanne C (2013) Expressive disclosure to improve well-being in patients with amyotrophic lateral sclerosis: a randomised, controlled trial. Psychology & health 28(6): 701-13	- Country Study conducted in the US.
Backhaus, Samantha, Ibarra, Summer, Parrott, Devan et al. (2016) Comparison of a Cognitive-Behavioral Coping Skills Group to a Peer Support Group in a Brain Injury Population. Archives of physical medicine and rehabilitation 97(2): 281-91	- Country Study conducted in the US.
Barnish, Jean, Atkinson, Rachel A, Barran, Susannah M et al. (2016) Potential Benefit of Singing for People with Parkinson's Disease: A Systematic Review. Journal of Parkinson's disease 6(3): 473-84	- Intervention Systematic review with 7/7 studies investigating the impact of singing on speech and not to address adjustment and engagement; relationships; motivation; adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Barnish, Maxwell S and Barran, Susannah M (2020) A systematic review of active group-based dance, singing, music therapy and theatrical interventions for quality of life, functional communication, speech, motor function and cognitive status in people with Parkinson's disease. BMC neurology 20(1): 371	- Publication date Systematic review with 16/67 studies published 2013 or later, and 50/67 published pre-2013. Studies published 2013 or later were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Bastepe-Gray, Serap, Wainwright, Lavinia, Lanham, Diane C et al. (2022) GuitarPD: A Randomized Pilot Study on the Impact of Nontraditional Guitar Instruction on Functional Movement and Well-Being in Parkinson's Disease. Parkinson's disease 2022: 1061045	- Country Study conducted in the US.
Bedard, Michel, Felteau, Melissa, Marshall, Shawn et al. (2014) Mindfulness-based cognitive therapy reduces symptoms of depression in people with a traumatic brain injury: results from a randomized controlled trial. The Journal of head trauma rehabilitation 29(4): e13-22	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.

Study	Reason for exclusion
Bennett, Sophie D, Heyman, Isobel, Coughtrey, Anna E et al. (2021) Telephone-guided self-help for mental health difficulties in neurological conditions: a randomised pilot trial. Archives of disease in childhood 106(9): 862-867	- Population Participants' primary neurological diagnosis is epilepsy, which is excluded from the protocol population.
Berardelli, I., Bloise, M.C., Bologna, M. et al. (2018) Cognitive behavioral group therapy versus psychoeducational intervention in Parkinson's disease. Neuropsychiatric Disease and Treatment 14: 339-405	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Bernstein, C J, Ellard, D R, Davies, G et al. (2016) Behavioural interventions for people living with adult-onset primary dystonia: a systematic review. BMC neurology 16: 40	- Study design (adults) Systematic review (adult population) with 3/10 randomised controlled trials and 7/10 non-randomised studies. Randomised controlled trials which were published 2013 or later, were checked against protocol criteria and were wither not relevant or had been separately located by the literature search and screened.
Betz, Cecily L, Smith, Kathryn A, Macias, Kristy et al. (2015) Testing the Transition Preparation Training Program: Well-being of relationships outcomes. Journal of pediatric rehabilitation medicine 8(3): 235-46	- Country Study conducted in the US.
Blackport, Daymon, Shao, Richard, Ahrens, Jessica et al. (2023) Online psychosocial intervention for persons with spinal cord injury: A meta-analysis. The journal of spinal cord medicine 46(4): 590-601	- Population Systematic review including participants who are in protocol (3/5 studies had people with CND) and out of guideline scope (2/5 studies involving people with a comorbid psychiatric condition – PTSD/anxiety/depression). Studies including participants with CND were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Blankespoor, Roos J, Schellekens, Melanie P J, Vos, Sandra H et al. (2017) The Effectiveness of Mindfulness-Based Stress Reduction on Psychological Distress and Cognitive Functioning in Patients with Multiple Sclerosis: a Pilot Study. Mindfulness 8(5): 1251-1258	- Study design (adults) Not a randomised controlled trial.
Borgen, I.M.H., Hauger, S.L., Forslund, M.V. et al. (2022) Goal Attainment in an Individually Tailored and Home-Based Intervention in the Chronic Phase after Traumatic Brain Injury. Journal of Clinical Medicine 11(4): 958	- Study design (adults) Not a randomised controlled trial.
Brenner, Rouven, Witzig-Brandli, Verena, Vetsch, Janine et al. (2022) Nursing Interventions Focusing on Self-	- Study design (adults)

Study	Reason for exclusion
efficacy for Patients With Multiple Sclerosis in Rehabilitation: A Systematic Review. International journal of MS care 24(4): 189-198	Systematic review (adult population) with 4/4 non-randomised studies.
Brown, Felicity L; Whittingham, Koa; Sofronoff, Kate (2015) Parental experiential avoidance as a potential mechanism of change in a parenting intervention for parents of children with pediatric acquired brain injury. Journal of pediatric psychology 40(4): 464-74	- Outcomes No relevant outcomes reported. Reports parental outcomes only (not including carer quality of life).
Brown, Felicity L, Whittingham, Koa, Boyd, Roslyn N et al. (2015) Does Stepping Stones Triple P plus Acceptance and Commitment Therapy improve parent, couple, and family adjustment following paediatric acquired brain injury? A randomised controlled trial. Behaviour research and therapy 73: 58-66	- Outcomes No relevant outcomes reported. Reports parental outcomes only (not including carer quality of life).
Brown, Felicity Louise, Whittingham, Koa, Boyd, Roslyn et al. (2013) A systematic review of parenting interventions for traumatic brain injury: child and parent outcomes. The Journal of head trauma rehabilitation 28(5): 349-60	- Publication date Systematic review with 7/7 studies published pre-2013.
Carletto, Sara, Cavalera, Cesare, Sadowski, Isabel et al. (2020) Mindfulness-Based Interventions for the Improvement of Well-Being in People With Multiple Sclerosis: A Systematic Review and Meta-Analysis. Psychosomatic medicine 82(6): 600-613	- Country Systematic review with 7/21 studies conducted in Iran, 4/21 studies conducted in the US, and 10/21 studies conducted in Europe. European studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Carletto, Sara, Tesio, Valentina, Borghi, Martina et al. (2017) The Effectiveness of a Body-Affective Mindfulness Intervention for Multiple Sclerosis Patients with Depressive Symptoms: A Randomized Controlled Clinical Trial. Frontiers in psychology 8: 2083	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Cermak, Carly A, McCabe, Sarah A, Kuchurean, Brianna et al. (2022) Parent Interventions Improve Behavior After Pediatric Traumatic Brain Injury: A Systematic Review and Meta-analysis. The Journal of head trauma rehabilitation 37(5): 293-302	- Country Systematic review with 5/7 studies conducted in the US, 1/7 in Mexico, 1/7 in the UK. The British study was checked against protocol criteria and had been separately located by the literature search and screened.
Craig, C.; Hiskey, S.; Spector, A. (2020) Compassion focused therapy: a systematic review of its effectiveness and acceptability in clinical populations. Expert Review of Neurotherapeutics 20(4): 385-400	- Population Systematic review including participants who are out of protocol (29/29 studies had people with mental health conditions as the primary diagnosis).

Study	Reason for exclusion
das Nair, Roshan, Kontou, Eirini, Smale, Kathryn et al. (2016) Comparing individual and group intervention for psychological adjustment in people with multiple sclerosis: a feasibility randomised controlled trial. Clinical rehabilitation 30(12): 1156-1164	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Davoudi, M., Taheri, A.A., Foroughi, A.A. et al. (2020) Effectiveness of acceptance and commitment therapy (ACT) on depression and sleep quality in painful diabetic neuropathy: a randomized clinical trial. Journal of Diabetes and Metabolic Disorders 19(2): 1081-1088	- Country Study conducted in Iran.
Dhandapani, Tamil Poonkuil Mozhi, Garg, Ishan, Tara, Anjli et al. (2021) Role of the Treatment of Post-Concussion Syndrome in Preventing Long-Term Sequela Like Depression: A Systematic Review of the Randomized Controlled Trials. Cureus 13(9): e18212	- Country Study conducted in the US.
Dorstyn, Diana S, Mathias, Jane L, Bombardier, Charles H et al. (2020) Motivational interviewing to promote health outcomes and behaviour change in multiple sclerosis: a systematic review. Clinical rehabilitation 34(3): 299-309	- Country Systematic review with 7/10 of the included studies conducted in the US, 2/10 in Iran, and 1/10 in Europe. The European study was checked against protocol criteria and was either not relevant or had been separately located by the literature search and screened.
Dunne, Jennifer, Chih, Hui Jun, Begley, Andrea et al. (2021) A randomised controlled trial to test the feasibility of online mindfulness programs for people with multiple sclerosis. Multiple sclerosis and related disorders 48: 102728	- Outcomes Quality of life measures reported as sub-scales and not overall scores.
Eaton, Andrew D, Craig, Shelley L, Rourke, Sean B et al. (2022) Cognitive remediation group therapy compared to mutual aid group therapy for people aging with HIV-associated neurocognitive disorder: Randomized, controlled trial. Social Work with Groups 45(2): 116-131	- Outcomes Outcomes presented in graphical form only, insufficient information to extract data.
Fernandez Lopez, Rodrigo and Antoli, Adoracion (2020) Computer-based cognitive interventions in acquired brain injury: A systematic review and meta-analysis of randomized controlled trials. PloS one 15(7): e0235510	- Intervention Cognitive interventions on cognitive domains not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Gandy, Milena, Karin, Eyal, McDonald, Sarah et al. (2020) A feasibility trial of an internet-delivered psychological intervention to manage mental health and functional outcomes in neurological disorders. Journal of psychosomatic research 136: 110173	- Study design (adults) Non-comparative study.

Study	Reason for exclusion
Garcia, Dainelys, Rodriguez, Gabriela M, Lorenzo, Nicole E et al. (2021) Intensive parent-child interaction therapy for children with traumatic brain injury: Feasibility study. Journal of Pediatric Psychology 46(7): 844-855	- Country Study conducted in the US.
Gassaway, Julie, Jones, Michael L, Sweatman, W Mark et al. (2017) Effects of Peer Mentoring on Self-Efficacy and Hospital Readmission After Inpatient Rehabilitation of Individuals With Spinal Cord Injury: A Randomized Controlled Trial. Archives of physical medicine and rehabilitation 98(8): 1526-1534e2	- Country Study conducted in the US.
Gertler, Paul; Tate, Robyn L; Cameron, Ian D (2015) Non-pharmacological interventions for depression in adults and children with traumatic brain injury. The Cochrane database of systematic reviews: cd009871	- Population Systematic review including participants who are out of guideline scope (6/6 studies had people with a comorbid psychiatric condition – PTSD/anxiety/depression).
Ghielen, Ires, Rutten, Sonja, Boeschoten, Rosa E et al. (2019) The effects of cognitive behavioral and mindfulness-based therapies on psychological distress in patients with multiple sclerosis, Parkinson's disease and Huntington's disease: Two meta-analyses. Journal of psychosomatic research 122: 43-51	- Population Systematic review including participants who are in protocol (11/19 studies involved people with CND) and out of guideline scope (8/19 studies had people with a comorbid psychiatric condition – PTSD/anxiety/depression). Studies including participants with CND were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Ghielen, Ires, van Wegen, Erwin E H, Rutten, Sonja et al. (2017) Body awareness training in the treatment of wearing-off related anxiety in patients with Parkinson's disease: Results from a pilot randomized controlled trial. Journal of psychosomatic research 103: 1-8	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Goldsmith, Kimberley, Hudson, Joanna L, Chalder, Trudie et al. (2020) How and for whom does supportive adjustment to multiple sclerosis cognitive-behavioural therapy work? A mediated moderation analysis. Behaviour research and therapy 128: 103594	- Publication type Secondary mediation analysis of a primary RCT, primary study included in the review (Moss-Morris 2013).
Greenberg, Jonathan, Carter, Sarah, Lester, Ethan et al. (2019) Cultivating resiliency in patients with neurofibromatosis 2 who are deafened or have severe hearing loss: a live-video randomized control trial. Journal of neuro-oncology 145(3): 561-569	- Country Study conducted in the US.
Guo, H, Yuan, J, Zhong, Y et al. (2019) Effects of Mindfulness-based Stress Reduction on Adverse Mood and Quality of Life in Patients with Complex Spinal	- Country Study conducted in China.

Study	Reason for exclusion
Metastases Undergoing Arterial Chemoembolization. Anti-tumor pharmacy 9(2): 344-348 and 352	
Han, Areum (2022) Effects of mindfulness-and acceptance-based interventions on quality of life, coping, cognition, and mindfulness of people with multiple sclerosis: a systematic review and meta-analysis. Psychology, health & medicine 27(7): 1514-1531	- Population Systematic review including participants who are in protocol (14/18 studies had people with CND) and out of guideline scope (4/18 studies had people with a comorbid psychiatric condition – PTSD/anxiety/depression). Studies including participants with CND were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Han, Areum, Wilroy, Jereme D, Yuen, Hon K et al. (2023) Effects of acceptance and commitment therapy on depressive symptoms, anxiety, pain intensity, quality of life, acceptance, and functional impairment in individuals with neurological disorders: A systematic review and meta-analysis. Clinical Psychologist 27(2): 210-231	- Population Systematic review including participants who are in protocol (16/24 studies had people with CND) and out of guideline scope (3/24 studies had people with a comorbid psychiatric condition – PTSD/anxiety/depression, 3/24 studies had people with fibromyalgia, 1/24 studies had adults with stroke, 1/24 studies had people with migraine). Studies including participants with CND were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Hanssen, K T, Beiske, A G, Landro, N I et al. (2016) Cognitive rehabilitation in multiple sclerosis: a randomized controlled trial. Acta neurologica Scandinavica 133(1): 30-40	- Intervention Cognitive rehabilitation not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Hart, Tessa, Brockway, Jo Ann, Maiuro, Roland D et al. (2017) Anger Self-Management Training for Chronic Moderate to Severe Traumatic Brain Injury: Results of a Randomized Controlled Trial. The Journal of head trauma rehabilitation 32(5): 319-331	- Country Study conducted in the US.
Hawley, Lenore, Morey, Clare, Sevigny, Mitch et al. (2022) Enhancing Self-Advocacy After Traumatic Brain Injury: A Randomized Controlled Trial. The Journal of head trauma rehabilitation 37(2): 114-124	- Country Study conducted in the US.
Hearn, Jasmine Heath and Cross, Ainslea (2020) Mindfulness for pain, depression, anxiety, and quality of	- Intervention

Study	Reason for exclusion
life in people with spinal cord injury: a systematic review. BMC neurology 20(1): 32	Systematic review with 2/5 studies investigating yoga and not designed to address adjustment and engagement; relationships; motivation; adaptive dysfunction and behaviours that challenge others; or a creative therapy. The 3/5 potentially relevant studies, were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Hickey, Lyndal, Anderson, Vicki, Hearps, Stephen et al. (2018) Family Forward: a social work clinical trial promoting family adaptation following paediatric acquired brain injury. Brain injury 32(7): 867-878	- Outcomes No relevant outcomes reported. Reports family adaptation outcomes only.
Hines, Emily A, Farr, Ellen M, Rhudy, Lori M et al. (2023) Efficacy of resilience interventions for dyads of individuals with brain injury and their caregivers: A systematic review of prospective studies. NeuroRehabilitation 52(1): 29-46	- Country Systematic review with 10/18 studies conducted in the US, 1/18 studies conducted in China, and 7/18 studies conducted in Europe. European studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Hiscock, Nathaniel, O'Callaghan, Clare, Goodwin, Megan et al. (2013) Music, intelligence, and the neurocognitive effects of childhood cancer treatment. Music and Medicine 5(2): 93-98	- Study design (CYP) Narrative review.
Huang, Gang, Lin, Bin Lai, Hu, Jian Hui et al. (2021) Effect of acceptance and commitment therapy on rehabilitation patients with spinal cord injury. Contemporary clinical trials communications 24: 100778	- Country Study conducted in China.
Huang, X. and Wu, H. (2022) Effect of Predictive Nursing Combined with Emotional Therapy on Rehabilitation Effect and Psychological State of Patients with Brain Injury after the Operation. Applied Bionics and Biomechanics 2022: 4159085	- Country Study conducted in China.
Hughes, Rachel; Fleming, Pete; Henshall, Lauren (2020) Peer support groups after acquired brain injury: a systematic review. Brain injury 34(7): 847-856	- Publication date Systematic review with 5/13 studies published 2013 or later, and 8/13 published pre-2013. Studies published 2013 or later were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.

Study	Reason for exclusion
Humphreys, Ioan, Drummond, Avril E R, Phillips, Ceri et al. (2013) Cost-effectiveness of an adjustment group for people with multiple sclerosis and low mood: a randomized trial. Clinical rehabilitation 27(11): 963-71	- Publication date Economic evaluation based on a RCT published pre-2013 (excluded study date).
Kalina, J Tamar, Hinojosa, Jim, Strober, Lauren et al. (2018) Randomized Controlled Trial to Improve Self-Efficacy in People With Multiple Sclerosis: The Community Reintegration for Socially Isolated Patients (CRISP) Program. The American journal of occupational therapy : official publication of the American Occupational Therapy Association 72(5): 7205205030p1-7205205030p8	- Country Study conducted in the US.
Kidd, Tara, Carey, Nicola, Mold, Freda et al. (2017) A systematic review of the effectiveness of self-management interventions in people with multiple sclerosis at improving depression, anxiety and quality of life. PloS one 12(10): e0185931	- Publication date Systematic review with 2/10 studies published 2013 or later, and 8/10 published pre-2013. Studies published 2013 or later were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Kiropoulos, Litza A, Kilpatrick, Trevor, Holmes, Alex et al. (2016) A pilot randomized controlled trial of a tailored cognitive behavioural therapy based intervention for depressive symptoms in those newly diagnosed with multiple sclerosis. BMC psychiatry 16(1): 435	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Korupolu, Radha, Malik, Aila, Ratcliff, Chelsea et al. (2022) Feasibility, Acceptability, and Efficacy of Mindfulness Training in People With Upper Motor Neuron Disorders: A Systematic Review. Archives of physical medicine and rehabilitation 103(12): 2410-2428	- Study design (adults) Systematic review (adult population) with 26/44 randomised controlled trials, 10/44 non-randomised studies, 8/44 and pre-post intervention studies. Randomised controlled trials which were published 2013 or later, were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Kreutzer, Jeffrey S, Marwitz, Jennifer H, Sima, Adam P et al. (2020) Evaluation of a Brief, Skill-Building, Supportive, and Educational Intervention for Couples After Brain Injury. The Journal of head trauma rehabilitation 35(3): 175-186	- Country Study conducted in the US.
Kreutzer, Jeffrey S, Marwitz, Jennifer H, Sima, Adam P et al. (2018) Efficacy of the resilience and adjustment intervention after traumatic brain injury: a randomized controlled trial. Brain injury 32(8): 963-971	- Country Study conducted in the US.
Lancaster, Katie, Thomson, Sarah J, Chiaravalloti, Nancy D et al. (2022) Improving mental health in Multiple	- Country Study conducted in the US.

Study	Reason for exclusion
Sclerosis with an interpersonal emotion regulation intervention: A prospective, randomized controlled trial. Multiple sclerosis and related disorders 60: 103643	
Lester, Ethan G; Gates, Melissa V; Vranceanu, Ana-Maria (2021) Mind-Body Therapy via Videoconferencing in Patients With Neurofibromatosis: Analyses of 1-Year Follow-up. Annals of behavioral medicine : a publication of the Society of Behavioral Medicine 55(1): 77-81	- Country Study conducted in the US.
Li, Jia, Gu, Chengzhi, Zhu, Min et al. (2019) Effects of positive psychological intervention on Parkinson's disease patients complicated with depression and cognitive dysfunction. Anadolu Psikiyatri Dergisi 20(4): 412-417	- Country Study conducted in China.
Li, Yan; Bressington, Daniel; Chien, Wai Tong (2017) Systematic Review of Psychosocial Interventions for People With Spinal Cord Injury During Inpatient Rehabilitation: Implications for Evidence-Based Practice. Worldviews on evidence-based nursing 14(6): 499-506	- Publication date Systematic review with 2/11 studies published 2013 or later, and 9/11 published pre-2013. Studies published 2013 or later were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Libin, A.V., Scholten, J., Schladen, M.M. et al. (2015) Executive functioning in TBI from rehabilitation to social reintegration: COMPASS goal, a randomized controlled trial (grant: 1I01RX000637-01A3 by the VA ORD RR&D, 2013-2016). Military Medical Research 2(1): 32	- Country Study conducted in the US.
Lincoln, Nadina B, Bradshaw, Lucy E, Constantinescu, Cris S et al. (2020) Group cognitive rehabilitation to reduce the psychological impact of multiple sclerosis on quality of life: the CRAMMS RCT. Health technology assessment (Winchester, England) 24(4): 1-182	- Intervention Cognitive rehabilitation for people with multiple sclerosis and cognitive problems, not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Little, Alice; Byrne, Christopher; Coetzer, Rudi (2021) The effectiveness of cognitive behaviour therapy for reducing anxiety symptoms following traumatic brain injury: A meta-analysis and systematic review. NeuroRehabilitation 48(1): 67-82	- Intervention Systematic review with 2/9 studies investigating sleep disturbance or depression/anxiety and not to address adjustment and engagement; relationships; motivation; adaptive dysfunction and behaviours that challenge others; or a creative therapy. The 7/9 potentially relevant studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.

Study	Reason for exclusion
Longley, Wendy A; Tate, Robyn L; Brown, Rhonda F (2023) The psychological benefits of neuropsychological assessment feedback as a psycho-educational therapeutic intervention: A randomized-controlled trial with cross-over in multiple sclerosis. Neuropsychological rehabilitation 33(5): 764-793	- Intervention Neuropsychological assessment feedback as a psycho-educational therapeutic intervention not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Lopes, Josiane and Keppers, Ivo Ilvan (2021) Music-based therapy in rehabilitation of people with multiple sclerosis: a systematic review of clinical trials. Arquivos de neuro-psiquiatria 79(6): 527-535	- Intervention Systematic review with 4/10 studies investigating the impact of music on hand dexterity, walking speed fatigue and verbal learning and not to address adjustment and engagement; relationships; motivation; adaptive dysfunction and behaviours that challenge others; or a creative therapy. The 6/10 potentially relevant studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Lu, TingYi, Goff-Albritton, Rachel, Darrow, Alice-Ann et al. (2023) Systematic literature review of the effect of music therapy on psychological outcomes in aphasia. Music and Medicine 15(1): 35-47	- Population Systematic review including participants who are in protocol (1/8 studies had people with CND), and out of protocol (7/8 studies had adults with stroke). The study including participants with CND was checked against protocol criteria and was either not relevant or had been separately located by the literature search and screened.
Luo, Fangyi, Ye, Mengfei, Lv, Tingting et al. (2021) Efficacy of Cognitive Behavioral Therapy on Mood Disorders, Sleep, Fatigue, and Quality of Life in Parkinson's Disease: A Systematic Review and Meta-Analysis. Frontiers in psychiatry 12: 793804	- Country Systematic review with 5/14 of the included studies conducted in the US, 3/14 in Australia, 1/14 in the UK, 1/14 in Sweden, 1/14 in the Netherlands, 1/14 in Italy, 1/14 in Switzerland, and 1/14 in Canada. Australian, British, Italian, Canadian, Swiss, Dutch, and Swedish studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Maas Genannt Bermpohl, Frederic; Hulsmann, Lea; Martin, Alexandra (2023) Efficacy of mindfulness- and acceptance-based cognitive-behavioral therapies for	- Population Systematic review including participants who are in protocol (4/16

Study	Reason for exclusion
bodily distress in adults: a meta-analysis. Frontiers in psychiatry 14: 1160908	studies had people with CND), and out of protocol (12/16 studies had adults with fibromyalgia, irritable bowel syndrome, chronic fatigue and functional somatic syndromes). The studies including participants with CND were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Mackay, Alison M, Buckingham, Robert, Schwartz, Raymond S et al. (2015) The Effect of Biofeedback as a Psychological Intervention in Multiple Sclerosis: A Randomized Controlled Study. International journal of MS care 17(3): 101-8	- Outcomes Outcomes reported as general depression, anxiety, and stress without further details on which outcome tool was used (validated or non-validated).
Martin, Staci, Allen, Taryn, Toledo-Tamula, Mary Anne et al. (2021) Acceptance and commitment therapy for adolescents and adults with neurofibromatosis type 1, plexiform neurofibromas, and chronic pain: Results of a randomized controlled trial. Journal of Contextual Behavioral Science 22: 93-101	- Country Study conducted in the US.
Martin, Staci, Wolters, Pamela L, Toledo-Tamula, Mary Anne et al. (2016) Acceptance and commitment therapy in youth with neurofibromatosis type 1 (NF1) and chronic pain and their parents: A pilot study of feasibility and preliminary efficacy. American journal of medical genetics. Part A 170(6): 1462-70	- Country Study conducted in the US.
Mast, Jennifer E, Antonini, Tanya N, Raj, Stacey P et al. (2014) Web-based parenting skills to reduce behavior problems following abusive head trauma: a pilot study. Child abuse & neglect 38(9): 1487-95	- Country Study conducted in the US.
McLean, G, Lawrence, M, Simpson, R et al. (2017) Mindfulness-based stress reduction in Parkinson's disease: a systematic review. BMC neurology 17(1): 92	- Intervention Mindfulness-based stress reduction intervention not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Meek, Christopher, Moghaddam, Nima G, Evangelou, Nikos et al. (2021) Acceptance-based telephone support around the time of transition to secondary progressive multiple sclerosis: A feasibility randomised controlled trial. Journal of Contextual Behavioral Science 21: 158-170	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Migliorini, C, Sinclair, A, Brown, D et al. (2016) A randomised control trial of an Internet-based cognitive	- Intervention

Study	Reason for exclusion
behaviour treatment for mood disorder in adults with chronic spinal cord injury. Spinal cord 54(9): 695-701	Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Milbury, Kathrin, Weathers, Shiao-Pei, Durrani, Sania et al. (2020) Online Couple-Based Meditation Intervention for Patients With Primary or Metastatic Brain Tumors and Their Partners: Results of a Pilot Randomized Controlled Trial. Journal of pain and symptom management 59(6): 1260-1267	- Country Study conducted in the US.
Montanes-Masias, Brenda, Bort-Roig, Judit, Pascual, Juan Carlos et al. (2022) Online psychological interventions to improve symptoms in multiple sclerosis: A systematic review: Online psychological interventions in Multiple Sclerosis. Acta neurologica Scandinavica 146(5): 448-464	- Intervention Systematic review with 4/13 studies investigating interventions for depression and fatigue and not to address adjustment and engagement; relationships; motivation; adaptive dysfunction and behaviours that challenge others; or a creative therapy. The 9/13 potentially relevant studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Mosweu, I, Moss-Morris, R, Dennison, L et al. (2017) Cost-effectiveness of nurse-delivered cognitive behavioural therapy (CBT) compared to supportive listening (SL) for adjustment to multiple sclerosis. Health economics review 7(1): 36	- Publication date The study included in the economic evaluation was conducted pre-2013 (studies published pre-2013 excluded in protocol).
Narad, Megan E, Minich, Nori, Taylor, H Gerry et al. (2015) Effects of a Web-Based Intervention on Family Functioning Following Pediatric Traumatic Brain Injury. Journal of developmental and behavioral pediatrics : JDBP 36(9): 700-7	- Country Study conducted in the US.
NATIONAL INSTITUTE FOR HEALTH RESEARCH. Dissemination, Centre (2019) Psychological therapies may improve parenting skills in parents of children with chronic illness.	- Outcomes No relevant outcomes reported. Systematic review only included parental outcomes (not including carer quality of life).
Oz, H S and Oz, F (2020) A psychoeducation program for stress management and psychosocial problems in multiple sclerosis. Nigerian journal of clinical practice 23(11): 1598-1606	- Country Study conducted in Turkey.
Payne, Lisa, Hawley, Lenore, Morey, Clare et al. (2020) Improving well-being after traumatic brain injury through volunteering: a randomized controlled trial. Brain injury 34(6): 697-707	- Country Study conducted in the US.

Study	Reason for exclusion
Perez, TO, Hernandez, MB, Perez, MAH et al. (2018) A randomized trial of cognitive behavioural therapy for improving psychological distress and cognitive impairments in multiple sclerosis. Multiple sclerosis journal 24: 238-239	- Publication type Conference abstract.
Pieri, M., Foote, H., Grealy, M.A. et al. (2023) Mind-body and creative arts therapies for people with aphasia: a mixed-method systematic review. Aphasiology 37(3): 504-562	- Study design (adults) Systematic review (adult population) with 4/22 randomised controlled trials, and 18/22 non-randomised studies. Randomised controlled trials, which were published 2013 or later, were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Pigott, Jennifer S, Kane, Edward J, Ambler, Gareth et al. (2022) Systematic review and meta-analysis of clinical effectiveness of self-management interventions in Parkinson's disease. BMC geriatrics 22(1): 45	- Study design (adults) Systematic review (adult population) with 16/36 randomised controlled trials, and 20/36 non-randomised studies. Randomised controlled trials, which were published 2013 or later, were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Ponsford, J, Lee, N K, Wong, D et al. (2016) Efficacy of motivational interviewing and cognitive behavioral therapy for anxiety and depression symptoms following traumatic brain injury. Psychological medicine 46(5): 1079-90	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Proctor, Barnaby J, Moghaddam, Nima G, Evangelou, Nikos et al. (2018) Telephone-supported acceptance and commitment bibliotherapy for people with multiple sclerosis and psychological distress: A pilot randomised controlled trial. Journal of Contextual Behavioral Science 9: 103-109	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Raj, Stacey P, Schmidt, Matthew M, Moscato, Emily L et al. (2021) Road-to-recovery-TBI: Pilot trial of an eHealth intervention for caregivers after pediatric brain injury. Clinical Practice in Pediatric Psychology 9(2): 167-179	- Country Study conducted in the US.
Raj, Stacey P, Zhang, Nanhua, Kirkwood, Michael W et al. (2018) Online Family Problem Solving for Pediatric Traumatic Brain Injury: Influences of Parental Marital Status and Participation on Adolescent Outcomes. The Journal of head trauma rehabilitation 33(3): 158-166	- Country Study conducted in the US.
Reitano, M.R., Guidetti, M., Maiorana, N.V. et al. (2023) The Effects of a New Integrated and Multidisciplinary	- Population

Study	Reason for exclusion
Cognitive Rehabilitation Program Based on Mindfulness and Reminiscence Therapy in Patients with Parkinson's Disease and Mild Cognitive Impairment: A Pilot Study. Brain Sciences 13(2): 201	67% of participants had mild cognitive impairment alone, which is excluded from the protocol population.
Reynard, Alison K; Sullivan, Amy Burleson; Rae-Grant, Alexander (2014) A systematic review of stress-management interventions for multiple sclerosis patients. International journal of MS care 16(3): 140-4	- Publication date Systematic review with 6/6 studies published pre-2013.
Robinson-Whelen, Susan, Hughes, Rosemary B, Taylor, Heather B et al. (2020) Promoting psychological health in women with SCI: Development of an online self-esteem intervention. Disability and health journal 13(2): 100867	- Country Study conducted in the US.
Rohricht, Frank, Sattel, Heribert, Kuhn, Christian et al. (2019) Group body psychotherapy for the treatment of somatoform disorder – a partly randomised-controlled feasibility pilot study. BMC psychiatry 19(1): 120	- Study design (adults) Partially randomised trial, 8/14 patients in the intervention group were not randomised, which does not meet the protocol criteria for study design.
Rytter, Hana Mala, Graff, Heidi J, Henriksen, Henriette K et al. (2021) Nonpharmacological Treatment of Persistent Postconcussion Symptoms in Adults: A Systematic Review and Meta-analysis and Guideline Recommendation. JAMA network open 4(11): e2132221	- Intervention Systematic review with 5/9 studies investigating the prevention of post-concussion symptoms, treatment of post-concussion symptoms and headache interventions and not to address adjustment and engagement; relationships; motivation; adaptive dysfunction and behaviours that challenge others; or a creative therapy. The 4/9 potentially relevant studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Sadeghi-Bahmani, Dena, Esmaeili, Leila, Mokhtari, Faezeh et al. (2022) Effects of Acceptance and Commitment Therapy (ACT) and Mindfulness-Based Stress Reduction (MBSR) on symptoms and emotional competencies in individuals with multiple sclerosis. Multiple sclerosis and related disorders 67: 104029	- Country Study conducted in Iran.
Sahin, Emel; Gulec Keskin, Serap; Terzi, Murat (2022) The effect of a psychoeducation program based on the rational emotional behavioral approach in individuals with multiple sclerosis diagnosis: A randomized controlled trial. Perspectives in psychiatric care 58(4): 1449-1459	- Country Study conducted in Turkey.
Sander, Angelle M, Clark, Allison N, Arciniegas, David B et al. (2021) A randomized controlled trial of acceptance and commitment therapy for psychological distress among persons with traumatic brain injury. Neuropsychological rehabilitation 31(7): 1105-1129	- Country Study conducted in the US.

Study	Reason for exclusion
Schirda, Brittney, Duraney, Elizabeth, Lee, H Kyu et al. (2020) Mindfulness training for emotion dysregulation in multiple sclerosis: A pilot randomized controlled trial. Rehabilitation psychology 65(3): 206-218	- Country Study conducted in the US.
Schroder, A., Heider, J., Zaby, A. et al. (2013) Cognitive behavioral therapy versus progressive muscle relaxation training for multiple somatoform symptoms: Results of a randomized controlled trial. Cognitive Therapy and Research 37(2): 296-306	- Publication date Original article published pre-2013.
Scott, Whitney, Guildford, Beth J, Badenoch, James et al. (2021) Feasibility randomized-controlled trial of online acceptance and commitment therapy for painful peripheral neuropathy in people living with HIV: The OPEN study. European journal of pain (London, England) 25(7): 1493-1507	- Intervention Primary aim of intervention was to improve pain, and not to improve and sustain emotional health and mental wellbeing.
Selders, M., Visser, R., van Rooij, W. et al. (2015) The development of a brief group intervention (Dynamic Interpersonal Therapy) for patients with medically unexplained somatic symptoms: a pilot study. Psychoanalytic Psychotherapy 29(2): 182-198	- Study design (adults) Not a randomised controlled trial.
Senders, Angela, Hanes, Douglas, Bourdette, Dennis et al. (2019) Impact of mindfulness-based stress reduction for people with multiple sclerosis at 8 weeks and 12 months: A randomized clinical trial. Multiple sclerosis (Houndmills, Basingstoke, England) 25(8): 1178-1188	- Country Study conducted in the US.
Shergill, Yaadwinder, Rice, Danielle B, Khoo, Eve-Ling et al. (2022) Mindfulness-Based Stress Reduction in Breast Cancer Survivors with Chronic Neuropathic Pain: A Randomized Controlled Trial. Pain research & management 2022: 4020550	- Intervention Primary aim of intervention was to improve pain, and not to improve and sustain emotional health and mental wellbeing, as per protocol.
Simpson, Robert, Booth, Jo, Lawrence, Maggie et al. (2014) Mindfulness based interventions in multiple sclerosis--a systematic review. BMC neurology 14: 15	- Publication date Systematic review with 3/3 studies published pre-2013.
Simpson, Robert, Posa, Stephanie, Langer, Laura et al. (2023) A systematic review and meta-analysis exploring the efficacy of mindfulness-based interventions on quality of life in people with multiple sclerosis. Journal of neurology 270(2): 726-745	- Country Systematic review with 3/14 of the included studies conducted in Iran, 2/14 in Australia, 2/14 in the UK, 2/14 in Italy, 2/14 in the US, 1/5 in Switzerland, and 1/5 in Canada. British, Australian, American, Italian, and Swiss studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.

Study	Reason for exclusion
Simpson, Robert, Simpson, Sharon, Ramparsad, Nitish et al. (2019) Mindfulness-based interventions for mental well-being among people with multiple sclerosis: a systematic review and meta-analysis of randomised controlled trials. Journal of neurology, neurosurgery, and psychiatry 90(9): 1051-1058	- Duplicate An updated version of the systematic review by Simpson 2023 with included studies checked against protocol.
Soo, Cheryl A, Tate, Robyn L, Catroppa, Cathy et al. (2022) A randomized controlled trial of cognitive behavioural therapy for managing anxiety in adolescents with acquired brain injury. Neuropsychological rehabilitation: 1-29	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Stalder-Luthy, Franziska, Messerli-Burgy, Nadine, Hofer, Helene et al. (2013) Effect of psychological interventions on depressive symptoms in long-term rehabilitation after an acquired brain injury: a systematic review and meta-analysis. Archives of physical medicine and rehabilitation 94(7): 1386-97	- Publication date Systematic review with included studies checked against protocol. All 7 studies published pre-2013.
Sterz, C, Heimes, S, Blessing, T et al. (2013) Creative arts therapy improves quality of life in MS - Results of a randomized controlled trial during inpatient rehabilitation. Neurologie und rehabilitation 19(3): 176-182	- Language Article published in German.
Stubberud, Jan, Langenbahn, Donna, Levine, Brian et al. (2015) Emotional health and coping in spina bifida after goal management training: a randomized controlled trial. Rehabilitation psychology 60(1): 1-16	- Intervention Goal management training as a cognitive rehabilitation method not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy.
Taylor, Paul; Dorstyn, Diana S; Prior, Elise (2020) Stress management interventions for multiple sclerosis: A meta-analysis of randomized controlled trials. Journal of health psychology 25(2): 266-279	- Country Systematic review with 3/8 studies conducted in the US, 2/8 studies conducted in Iran, and 3/8 studies conducted in Europe. European studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Thakur, Divya, Dhandapani, Manju, Ghai, Sandhya et al. (2019) Intracranial Tumors: A Nurse-Led Intervention for Educating and Supporting Patients and Their Caregivers. Clinical journal of oncology nursing 23(3): 315-323	- Country Study conducted in India.
Thompson, Bethany, Moghaddam, Nima, Evangelou, Nikos et al. (2022) Effectiveness of acceptance and commitment therapy for improving quality of life and mood in individuals with multiple sclerosis: A systematic review	- Country Systematic review with 2/6 of the included studies conducted in the UK, 2/6 in Iran, 1/6 in Italy, and 1/6 in

Study	Reason for exclusion
and meta-analysis. Multiple sclerosis and related disorders 63: 103862	Sweden. British, Italian, and Swedish studies were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Tracey, Allie J, Bateman, Andre G, Baez, Shelby E et al. (2023) Effectiveness of interventions for the improvement of mental health and well-being post-concussion: a systematic review. Brain injury 37(10): 1135-1158	- Country Systematic review with included studies checked against protocol. 23 studies included in the systematic review, 18 studies conducted in the US, 1 study conducted in Iran, 2 study interventions for fatigue and social function not an intervention for adjustment and engagement; to improve relationships; to improve motivation; for adaptive dysfunction and behaviours that challenge others; or a creative therapy, 1 study population did not meet the guideline definition of chronic (3 months since diagnosis or injury) - recruitment and intervention within 4-6 weeks of traumatic brain injury, 1 study intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Tschoepe, Raheleh, Benfield, Anna, Posey, Rachael et al. (2022) A Systematic Review of the Effects of Community Transition Programs on Quality of Life and Hospital Readmissions for Adults With Traumatic Spinal Cord Injury. Archives of physical medicine and rehabilitation 103(5): 1013-1022e12	- Study design (adults) Narrative review.
van Groenestijn, Annerieke C, Schroder, Carin D, Visser-Meily, Johanna M A et al. (2015) Cognitive behavioural therapy and quality of life in psychologically distressed patients with amyotrophic lateral sclerosis and their caregivers: Results of a prematurely stopped randomized controlled trial. Amyotrophic lateral sclerosis & frontotemporal degeneration 16(56): 309-15	- Outcomes Outcomes presented in graphical form without changes in scores from baseline and confidence intervals.
van Ravesteijn, Hiske, Grutters, Janneke, olde Hartman, Tim et al. (2013) Mindfulness-based cognitive therapy for patients with medically unexplained symptoms: a cost-effectiveness study. Journal of psychosomatic research 74(3): 197-205	- Population Cost-effectiveness study. Primary RCT's population was medically unexplained symptoms consisting mainly of fatigue, joint problems, back pain, gastrointestinal symptoms, and musculoskeletal problems. Only 10% of population included CND population.

Study	Reason for exclusion
van Ravesteijn, Hiske, Lucassen, Peter, Bor, Hans et al. (2013) Mindfulness-based cognitive therapy for patients with medically unexplained symptoms: a randomized controlled trial. Psychotherapy and psychosomatics 82(5): 299-310	- Population Participants' condition was medically unexplained symptoms consisting mainly of fatigue, joint problems, back pain, gastrointestinal symptoms, and musculoskeletal problems. Only 10% of participants with a chronic neurological disorder, as per protocol population criteria.
Venasse, Myriam; Edwards, Thomas; Pilutti, Lara A (2018) Exploring Wellness Interventions in Progressive Multiple Sclerosis: an Evidence-Based Review. Current treatment options in neurology 20(5): 13	- Study design (adults) Narrative review.
Verberne, Daan P J; Spauwen, Peggy J J; van Heugten, Caroline M (2019) Psychological interventions for treating neuropsychiatric consequences of acquired brain injury: A systematic review. Neuropsychological rehabilitation 29(10): 1509-1542	- Study design (adults) Systematic review (adult population) with 4/18 randomised controlled trials, and 14/18 non-randomised studies. Randomised controlled trials, which were published 2013 or later, were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Wade, S.L., Kaizar, E.E., Narad, M. et al. (2018) Online family problem-solving treatment for pediatric traumatic brain injury. Pediatrics 142(6): e20180422	- Country Systematic review with 5/5 of the included studies conducted in the US.
Wade, Shari L, Cassedy, Amy E, Shultz, Emily L et al. (2017) Randomized Clinical Trial of Online Parent Training for Behavior Problems After Early Brain Injury. Journal of the American Academy of Child and Adolescent Psychiatry 56(11): 930-939e2	- Country Study conducted in the US.
Wade, Shari L, Cassedy, Amy E, Taylor, H Gerry et al. (2019) Adolescent quality of life following family problem-solving treatment for brain injury. Journal of consulting and clinical psychology 87(11): 1043-1055	- Country Study conducted in the US.
Wade, Shari L, Fisher, Allison P, Kaizar, Eloise E et al. (2019) Recovery Trajectories of Child and Family Outcomes Following Online Family Problem-Solving Therapy for Children and Adolescents after Traumatic Brain Injury. Journal of the International Neuropsychological Society : JINS 25(9): 941-949	- Country Systematic review with 5/5 of the included studies conducted in the US.
Wade, Shari L, Kurowski, Brad G, Kirkwood, Michael W et al. (2015) Online problem-solving therapy after traumatic brain injury: a randomized controlled trial. Pediatrics 135(2): e487-95	- Country Study conducted in the US.
Wade, Shari L, Narad, Megan E, Kingery, Kathleen M et al. (2017) Teen online problem solving for teens with	- Country Study conducted in the US.

Study	Reason for exclusion
traumatic brain injury: Rationale, methods, and preliminary feasibility of a teen only intervention. Rehabilitation psychology 62(3): 290-299	
Wade, Shari L, Stancin, Terry, Kirkwood, Michael et al. (2014) Counselor-assisted problem solving (CAPS) improves behavioral outcomes in older adolescents with complicated mild to severe TBI. The Journal of head trauma rehabilitation 29(3): 198-207	- Country Study conducted in the US.
Wade, Shari L, Taylor, H Gerry, Cassedy, Amy et al. (2015) Long-Term Behavioral Outcomes after a Randomized, Clinical Trial of Counselor-Assisted Problem Solving for Adolescents with Complicated Mild-to-Severe Traumatic Brain Injury. Journal of neurotrauma 32(13): 967-75	- Country Study conducted in the US.
Wade, Shari L, Taylor, Hudson Gerry, Yeates, Keith Owen et al. (2018) Online Problem Solving for Adolescent Brain Injury: A Randomized Trial of 2 Approaches. Journal of developmental and behavioral pediatrics : JDBP 39(2): 154-162	- Country Study conducted in the US.
Walklet, Elaine, Muse, Kate, Meyrick, Jane et al. (2016) Do Psychosocial Interventions Improve Quality of Life and Wellbeing in Adults with Neuromuscular Disorders? A Systematic Review and Narrative Synthesis. Journal of neuromuscular diseases 3(3): 347-362	- Study design (adults) Systematic review (adult population) with 3/10 randomised controlled trials, and 7/10 non-randomised studies. Randomised controlled trials, which were published 2013 or later, were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Whiting, Diane, Deane, Frank, McLeod, Hamish et al. (2020) Can acceptance and commitment therapy facilitate psychological adjustment after a severe traumatic brain injury? A pilot randomized controlled trial. Neuropsychological rehabilitation 30(7): 1348-1371	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.
Wiart, Laurent, Luaute, Jacques, Stefan, Angelique et al. (2016) Non pharmacological treatments for psychological and behavioural disorders following traumatic brain injury (TBI). A systematic literature review and expert opinion leading to recommendations. Annals of physical and rehabilitation medicine 59(1): 31-41	- Publication date Systematic review with 8/96 studies published 2013 or later, and 88/96 published pre-2013. Studies published 2013 or later were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Wobma, Ruth, Nijland, Rinske H M, Ket, Johannes C F et al. (2016) Evidence for peer support in rehabilitation for individuals with acquired brain injury: A systematic review. Journal of rehabilitation medicine 48(10): 837-840	- Publication date Systematic review with 2/2 studies published pre-2013.

Study	Reason for exclusion
WOODS Damith, Thushara and et, al (2014) Long-term maintenance of treatment effects following intervention for families with children who have acquired brain injury. Social Care and Neurodisability 5(2): 70-82	- Study design (CYP) Non-comparative study.
Zhang, K., Ma, J., Chen, J. et al. (2022) Effects of Drawing Therapy on Pediatric Oncology Patients: A Systematic Review. Cancer Nursing 45(2): e397-e406	- Publication date Systematic review with 5/8 studies published 2013 or later, and 3/8 published pre-2013. Studies published 2013 or later were checked against protocol criteria and were either not relevant or had been separately located by the literature search and screened.
Zhang, Qi, Yang, Xia, Song, Huimin et al. (2020) Cognitive behavioral therapy for depression and anxiety of Parkinson's disease: A systematic review and meta-analysis. Complementary therapies in clinical practice 39: 101111	- Intervention Intervention is designed to treat a comorbid psychiatric condition (PTSD/anxiety/depression) and is therefore outside of the guideline scope.

CND: chronic neurological disorders

Economic studies

See supplementary material 2 for excluded studies across all reviews included in this guideline.

Appendix K – Research recommendations

Research recommendations for review question: What is the effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing?

Research question

What is the effectiveness and cost-effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing for children and young people with chronic neurological disorders**.**

Why this is important

Rehabilitation programmes often include psychological provision for children and young people with chronic neurological disorders (CND). However, there is limited evidence for the effectiveness and cost effectiveness of these interventions and approaches and it is unclear whether psychological provision itself improves emotional health and mental wellbeing for children and young people with CND, or whether the provision of other interventions (physical/social) are also effective.

Table 25: Research recommendation rationale

Research question	
Why is this needed	
Importance to 'patients' or the population	CND can significantly impair daily functioning across social, physical, emotional, cognitive and spirituality domains and lead to disability. CND can fundamentally impact on an individual's sense of self and identity, consequently having detrimental effects on the emotional health and wellbeing of CYP. Effective interventions to enhance emotional health and mental wellbeing can help CYP relate to their condition in a way that promotes acceptance, agency and adaptation to their condition, regain independence in everyday tasks, reduce the impact of their symptoms, and improve social, educational, and personal functioning. Researching effective interventions that can support emotional wellbeing though empowering patients in their rehabilitation journey is needed, providing patients with the psychological tools to aid their rehabilitation.
Relevance to NICE guidance	Within this guidance there are recommendations based on evidence made for supporting the emotional health and mental wellbeing of adults, however, this was lacking for CYP.
Relevance to the NHS	By identifying effective emotional health and mental wellbeing interventions, healthcare providers can support emotional wellbeing early within the rehabilitation process, potentially preventing worsening symptoms and aiding full participation in rehabilitation and integration into

Research question	
	activities at home, school and the community. Effective emotional health interventions could reduce the development of chronic and complex issues which may require specialist level support by improving patient outcomes earlier in the pathway i.e. PTSD and other mental health diagnoses. Additionally, given the potential differences in outcomes and intervention costs between various emotional health and mental wellbeing interventions, there may be differences in their cost effectiveness.
National priorities	High – emotional health and mental wellbeing of CYP is a key priority in the NHS Five Year Forward View.
Current evidence base	The evidence review included a single study on interventions to support family relationships for CYP in CND. No studies were included in the evidence review on interventions to support adjustment and engagement, interventions to improve motivation, interventions for adaptive dysfunction and behaviours that challenge others, or creative therapies for CYP with CND.
Equality	Research allows for a deeper understanding of which interventions work best for different types of CND and patient profiles. This leads to more personalized treatment plans that address the unique emotional and psychological challenges each patient faces. Research also ensures that interventions are adapted to the cultural, social, and personal contexts of patients, making treatments more relevant and effective for a diverse range of individuals.

CND: chronic neurological disorders; CYP: children and young people; PTSD: post-traumatic stress disorder

Table 26: Research recommendation modified PICO table

Criterion	Explanation
Population	Children and young people with rehabilitation needs due to the following chronic neurological disorders: • Acquired brain injury • Acquired spinal cord injury • Acquired peripheral nerve disorders • Progressive neurological diseases • Functional neurological disorders
Intervention	Interventions and approaches for improving and sustaining emotional health and wellbeing. These include: • Interventions for adjustment and engagement • Interventions to improve relationships • Interventions to improve motivation

Criterion	Explanation
	• Interventions for adaptive dysfunction and behaviours that challenge others • Creative therapies
Comparator	• Interventions compared with others in the same group or: • Placebo (placebo or sham) • Control (no intervention, waitlist, standard rehabilitation care alone, or 'usual care') • The same intervention (as listed under 'intervention') but varied in terms of: ○ Frequency ○ Intensity ○ Timing ○ Setting
Outcomes	• Physical and mental health related quality of life and social care related quality of life • Mood • Pain • Coping and adjustment • Behaviour change • Return to education, or training • Carer/family quality of life • Cost-effectiveness (including resource use measurements and QALY estimations using a validated preference-based measure such as the EQ-5D or SF-6D)
Study design	• Experimental study with random assignment to intervention and control groups. • Experimental study with non-random assignment to intervention and control groups (quasi-randomised controlled trials, non-randomised controlled trials and prospective and retrospective cohort studies)
Timeframe	Long-term
Additional information	None

EQ-5D: EuroQol 5-dimensions; SF-6D: short-form 6-dimension; QALY: quality-adjusted life years

Research question

What is the effectiveness and cost effectiveness of interventions and approaches for improving and sustaining emotional health and mental wellbeing for adults with functional neurological disorders?

Why this is important

Rehabilitation programmes often include psychological provision for people with functional neurological disorders (FND), but treatments to date have been poorly evidenced as to whether they reduce the incidence or intensity of FND, or whether they improve secondary impacts such as associated disability, low mood or anxiety. It is unclear whether psychological provision itself improves emotional health and mental wellbeing for adults with FND, or whether the provision of other treatments for example FND-specific physiotherapy is just as effective.

Table 27: Research recommendation rationale

Research question	
Why is this needed	
Importance to 'patients' or the population	FND can significantly impair daily functioning and lead to disability. Effective interventions to enhance emotional health help patients regain autonomy in everyday tasks, reduce the impact of their symptoms, and improve social, occupational, and personal functioning. FND is often associated with co-occurring mental health conditions such as anxiety, depression, and trauma-related disorders. Researching effective interventions can help address these emotional difficulties, providing patients with the psychological tools to cope with co-occurring disorders.
Relevance to NICE guidance	NICE has one quality standard on FND stating that 'Adults with symptoms that occur as part of a functional neurological disorder can benefit from support and management in non-specialist care.' [QS198]
Relevance to the NHS	By identifying effective emotional health interventions, healthcare providers can address emotional issues early in the course of FND, potentially preventing worsening symptoms and ensuring a quicker recovery. Emotional distress and co-occurring mental health issues like anxiety and depression can exacerbate FND symptoms, leading to increased use of medications. By addressing emotional well-being through psychological and non-pharmacological interventions, the NHS can reduce the overall prescription of drugs, particularly for anxiety, depression, and pain management, saving costs. FND patients often require multiple consultations with neurologists, psychiatrists, and other specialists, increasing the overall healthcare expenditure. Effective emotional health interventions could reduce the need for frequent

Research question	
	specialist visits by improving patient outcomes earlier in the care pathway. FND is often misdiagnosed or misunderstood, leading to excessive and repetitive investigations, referrals, and tests that increase strain on outpatient services. Effective psychological and emotional health interventions could streamline care by ensuring that the mental health component is addressed early, reducing the need for repeated consultations and diagnostic tests.
National priorities	It is a national priority to integrate aspects of care as laid out in the Five Year Forward View. Research on emotional health interventions encourages collaboration between neurologists, psychologists, psychiatrists, and physical therapists. This integrated care approach ensures that all aspects of the disorder are treated, providing patients with a cohesive and supportive care plan.
Current evidence base	The evidence review included a single study on interventions to support adjustment and engagement in adults with FND. No studies were included in the evidence review on interventions to support family relationships, interventions to improve motivation, interventions for adaptive dysfunction and behaviours that challenge others, or creative therapies in adults with FND.
Equality	Research allows for a deeper understanding of which interventions work best for different FND subtypes and patient profiles. This leads to more personalized treatment plans that address the unique emotional and psychological challenges each patient faces. Research also ensures that interventions are adapted to the cultural, social, and personal contexts of patients, making treatments more relevant and effective for a diverse range of individuals.

FND: functional neurological disorders

Table 28: Research recommendation modified PICO table

Criterion	Explanation
Population	Adults with rehabilitation needs due to functional neurological disorders.
Intervention	Interventions and approaches for improving and sustaining emotional health and wellbeing. These include: • Interventions for adjustment and engagement • Interventions to improve relationships • Interventions to improve motivation • Interventions for adaptive dysfunction and behaviours that challenge others • Creative therapies

Criterion	Explanation
Comparator	• Interventions compared with others in the same group or: • Placebo (placebo or sham) • Control (no intervention, waitlist, standard rehabilitation care alone, or 'usual care') • The same intervention (as listed under 'intervention') but varied in terms of: ○ Frequency ○ Intensity ○ Timing ○ Setting
Outcomes	• Physical and mental health related quality of life and social care related quality of life • Mood • Pain • Coping and adjustment • Behaviour change • Return to education, or training • Carer/family quality of life • Cost-effectiveness (including resource use measurements and QALY estimations using a validated preference-based measure such as the EQ-5D or SF-6D)
Study design	• Experimental study with random assignment to intervention and control groups.
Timeframe	Long-term
Additional information	None

EQ-5D: euroqol- -dimensions; SF-6D: short-form-6 dimension; QALY: quality-adjusted life years