REMOTE PSYCHOTHERAPIES FOR CHRONIC NON-CANCER PAIN

EFFECTIVENESS AND ACCEPTABILITY OF REMOTELY DELIVERED PSYCHOTHERAPIES FOR MANAGEMENT OF CHRONIC NON-CANCER PAIN: A SYSTEMATIC REVIEW AND NETWORK META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

By SHIVA SHAHABI, D.D.S.

Thesis Submitted to the School of Graduate Studies in Partial Fulfilment of the Requirements for the Degree Master of Science

McMaster University MASTER OF SCIENCE (2025)

Hamilton, Ontario (Health Research Methods, Evidence, and Impact)

TITLE: Effectiveness and acceptability of remotely delivered psychotherapies for management of chronic non-cancer pain: A systematic review and network meta-analysis of randomized controlled trials

AUTHOR: Shiva Shahabi, D.D.S.
SUPERVISOR: Dr. Behnam Sadeghirad
NUMBER OF PAGES: 181 + xiv

Lay Abstract

Chronic pain is a common debilitating condition that can be difficult to manage. Psychological therapies such as cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT) are often delivered in person, however remote options (online or phone-based) are becoming more available. We reviewed 66 studies with nearly 9,000 people to see how effective these remote therapies are for chronic non-cancer pain. Compared to usual care, remote CBT and ACT led to small improvements in pain, depression, anxiety, quality of life, and, in some cases, sleep and physical function. These benefits were most noticeable right after treatment ended and were less clear over time. People receiving remote CBT or ACT were more likely to leave studies compared to those receiving usual care. Overall, remote CBT and ACT appear to provide small benefits and may be feasible and accessible additional options for managing chronic pain.

Abstract

Background: Psychotherapeutic interventions, including cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT), have shown benefits in managing chronic non-cancer pain (CNCP). This systematic review and network meta-analysis (NMA) assessed the effectiveness and acceptability of remote psychotherapies for CNCP.

Methods: We searched databases for trials comparing remote psychotherapies (and their combinations with other treatments) with usual care and active interventions. Reviewers independently screened studies, extracted data, and assessed risk of bias. We conducted a frequentist random-effects NMA across outcomes at post-treatment, first follow-up (≤ 6 months), and second follow-up (6–12 months), with certainty of evidence evaluated using CINeMA. When interventions were disconnected in networks, we ran component NMA.

Results: Sixty-six trials (8,993 participants) were included. At post-treatment, moderate certainty evidence showed that compared to usual care, remote ACT (r-ACT) and remote CBT (r-CBT) probably result in slight pain reductions (mean difference [MD]: –0.59, 95% confidence interval [CI]: –0.81 to –0.37 and MD: –0.36, 95% CI: –0.50 to –0.23, respectively; on 0-10 visual analogue scale), slight quality of life improvements (MD: 0.06, 95% CI: 0.02 to 0.10 and MD: 0.05, 95% CI: 0.03 to 0.08, respectively; on 0-1 EuroQol- 5 dimension), slight depression reductions (MD: –1.75, 95% CI: –2.46 to –1.05 and MD: –1.80, 95% CI: –2.32 to –1.28, respectively; on 0-27 patient health questionnaire-9), and slight anxiety reductions (MD: –0.84, 95% CI: –1.64 to –0.03 and MD: –1.41, 95% CI: –1.93 to –0.89, respectively; on 0-21 general anxiety disorder-7). Benefits at

follow-ups were limited. The dropout rates may increase with r-ACT (risk difference [RD]: 7.33% more patients, 95% CI: 2.4% to 13.73%) and r-CBT (RD: 6.13% more patients, 95% CI: 2.4% to 10.80%) compared to usual care (low certainty).

Conclusion: r-ACT and r-CBT offer slight benefits for CNCP. Future research should enhance patient engagement and assess long-term effects.

Acknowledgements

First and foremost, I would like to express my gratitude to my supervisor, Dr. Behnam Sadeghirad, whose guidance, support, and encouragement have been instrumental throughout my research. I would also like to thank the members of my thesis committee for their valuable input that helped shape the direction and quality of this thesis.

I sincerely thank my HRM professors, TAs, administrative team, and classmates for their support and the positive impact they have had on my academic journey.

To my family, Mom, Dad, Sara, and Mohammadreza, your love, patience, and belief in me have carried me through the most challenging times.

Finally, to my best friend, Niloofar, thank you for being a constant source of encouragement. Our weekly video calls, shared laughter, and your presence (despite the physical distance) made this journey possible. Your support has meant the world to me.

Table of contents

List of Tables

List of Figures

List of Abbreviations

ACT – Acceptance and Commitment Therapy

ASI – Anxiety Sensitivity Index

BAI – Beck Anxiety Inventory

BDI – Beck Depression Inventory

CBT – Cognitive Behavioral Therapy

CNMA – Component Network Meta-Analysis

CI – Confidence Interval

CINAHL – Cumulative Index to Nursing and Allied Health Literature

CINeMA – Confidence in Network Meta-Analysis

CNCP – Chronic Non-Cancer Pain

DASS – Depression Anxiety Stress Scale

EQ-5D – EuroQol-5 Dimension

GAD-7 – Generalized Anxiety Disorder-7

GRADE – Grading of Recommendations Assessment, Development and Evaluation

HADS – Hospital Anxiety and Depression Scale

HR-QoL – Health-Related Quality of Life

iMD – incremental Mean Difference

IMMPACT – Initiative on Methods, Measurement, and Pain Assessment in Clinical Trials

IQR – Interquartile Range

ISI – Insomnia Severity Index

IVR – Interactive Voice Response

MADRS – Montgomery-Asberg Depression Rating Scale

MD – Mean Difference

MESH – Medical Subject Headings

MID – Minimally Important Difference

NA – Not Applicable

NMA – Network Meta-Analysis

NR – Not Reported

NRS – Numeric Rating Scale

PCS – Physical Component Summary

PDI – Pain Disability Index

PHQ-9 – Patient Health Questionnaire-9

PRISMA – Preferred Reporting Items for Systematic Reviews and Meta-Analyses

PSQI – Pittsburgh Sleep Quality Index

QoL – Quality of Life

r-ACT – Remotely Delivered Acceptance and Commitment Therapy

r-CBT – Remotely Delivered Cognitive Behavioral Therapy

RCT – Randomized Controlled Trial

RD – Risk Difference

RoB – Risk of Bias

RR – Risk Ratio

SD – Standard Deviation

SE – Standard Error

SF-12 – 12-Item Short Form Health Survey

SF-36 – 36-Item Short Form Health Survey

SF-6 – 6-Item Short Form Health Survey

SUCRA – Surface Under the Cumulative Ranking Curve

VAS – Visual Analog Scale

WHO-QoL – World Health Organization Quality of Life

WOMAC – Western Ontario and McMaster Universities Osteoarthritis Index

Declaration of Academic Achievement

The research presented in this thesis was led by Shiva Shahabi, who served as the primary researcher. Responsibilities undertaken included designing the study, managing data collection and analysis, overseeing methodological approaches, coordinating the project, and drafting the manuscript.

Dr. Behnam Sadeghirad supervised the project, providing expert methodological guidance and contributing extensively to editorial revisions. Additional methodological input was provided by committee members Dr. Jason W. Busse and Dr. Andrea Darzi.

Rachel Couban contributed by refining and finalizing the literature search strategy. Study screening and data extraction were carried out by Andy Cui, Khadijah Keshishi, and Azin Khosravirad, under the direction of the primary researcher, who also served as the secondary reviewer and resolved any discrepancies. The primary researcher conducted all analyses, interpreted the results, and prepared the final manuscript.

Chapter 1: INTRODUCTION

1.1. Chronic non-Cancer Pain

Chronic non-cancer pain (CNCP) is a widespread and debilitating condition, defined as pain lasting for at least three months (1). It is recognized as a global health challenge, affecting approximately 1.5 billion people worldwide, with an estimated prevalence ranging from 20% to 30% worldwide (2). This variation could be explained by differences in social, economic, and gender distributions (3). CNCP is particularly prevalent among vulnerable populations, including older adults, patients with co-morbid diseases, and individuals from diverse societal and economic backgrounds (4, 5). A repeated cross-sectional survey analysis of the Canadian Community Health Survey data from 2000 to 2014 revealed that the prevalence of chronic pain among the general Canadian population is showing an increasing trend from approximately 16.3% suffering in 2000 to 21.0% in 2014 (6). The underlying mechanisms of CNCP are complex, arising from multiple pain sources, including nociceptive, neuropathic, and nociplastic pain (7). Nociceptive pain occurs due to continuous signals triggered by actual or potential tissue damage, while neuropathic pain arises due to injury or disease affecting the peripheral or central nervous system (8). Nociplastic pain was introduced to fill in the gap for those pain conditions without clear evidence of nociceptive or neuropathic involvement, resulting from the altered function of pain-related sensory pathways (9). This type of pain can occur alone or alongside chronic pain conditions that are primarily nociceptive or neuropathic (7). The overlapping of these mechanisms complicates the identification of the cause and the provision of effective treatment strategies.

CNCP could profoundly impact an individual's daily life, severely limiting physical function and contributing to significant psychological and social challenges, including anxiety, depression, sleep disturbances, reduced work productivity, and financial strain (10, 11). The combination of these physical and psychological burdens can severely affect quality of life, as individuals struggle to engage in daily activities and social participation (12). Certain CNCP conditions, such as chronic low back pain, are among the leading causes of years lived with disability globally, making substantial contributions to the overall disease burden (13).

1.2. Current Management Options

The management of CNCP requires a multimodal approach to account for the diverse underlying mechanisms (14). Treatment strategies involve a combination of pharmacological and non-pharmacological approaches, each offering specific benefits and limitations. Pharmacological treatments include non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen and naproxen, which provide modest pain relief, particularly for inflammatory conditions (15). However, their long-term use is associated with gastrointestinal complications and an increased risk of cardiovascular events (16). Strong opioids, such as morphine and oxycodone, offer potent analgesia for severe pain; however, they pose significant risks, including the development of tolerance, dependence, respiratory depression, and overdose, making them less suitable for long-term management (17). Antidepressants are another class of medications commonly used for neuropathic pain, although their efficacy is inconclusive for most pain conditions (18). Gabapentinoids, such as gabapentin and pregabalin, have also been used to help alleviate

neuropathic pain, often accompanied by adverse effects such as sedation, dizziness, and cognitive impairment (19).

Interventional procedures, including corticosteroid injections and nerve blocks, can offer temporary localized pain relief, with the need to have repeated treatments and potential risks such as infection, nerve damage, and tissue atrophy (20). Physical therapy could play a crucial role in CNCP management by improving mobility, muscle strength, and overall function through structured exercise programs (21). Complementary therapies such as acupuncture and massage therapy also contribute to pain relief by enhancing circulation and modulating pain perception, although their efficacy may vary among individuals (22).

Since CNCP presents both physical and psychological challenges, pharmacological and non-pharmacological interventions aimed at physical aspects alone may not provide sufficient relief (23). Psychological factors such as anxiety, depression, and stress can exacerbate pain perception, making a holistic approach essential (24). Multimodal pain management strategies that add psychological therapies and patient education to usual medical care could help address the mental and cognitive aspects of chronic pain, improving overall treatment outcomes (23).

1.3. Psychological Interventions

Psychotherapeutic methods have been shown to be effective in helping CNCP patients reframe their pain experience, improve emotional regulation, and enhance daily functioning (25).

Cognitive Behavioral Therapy (CBT) is one of the most widely applied psychological interventions for CNCP (26). The logic behind this treatment is that thoughts, emotions, and behaviors are interconnected, and changing maladaptive thought patterns can help reduce pain-related distress

(27). CBT also involves behavioral techniques such as pacing activities, relaxation techniques, and problem-solving skills (28). The primary objective is the transition of the patient's focus from the unrealistic expectation of pain elimination to pain management and improved quality of life (29). Research has shown that CBT can provide small benefits in reducing pain intensity, improving mood, and increasing overall function by helping patients develop adaptive coping mechanisms (25).

Acceptance and Commitment Therapy (ACT) is another effective psychological therapy for chronic pain, reducing depression and anxiety, and improving psychological flexibility, pain-related functioning, and pain acceptance (30). The ACT approach focuses on encouraging individuals to accept their pain as part of their experience while emphasizing what they can control (31). The principal idea is that attempting to alter pain or avoidance often leads to more distress, whereas acceptance can lead people to a fulfilling life despite their pain (32).

In recent years, there has been growing interest in delivering psychological interventions remotely, given the increasing need for accessible pain management solutions. Many individuals with chronic pain face barriers to attending in-person treatments, such as mobility limitations, financial constraints, or geographic inaccessibility (33). Telehealth and digital interventions, including telephone-based sessions, internet-based sessions, and mobile health applications, have emerged as promising alternatives to traditional face-to-face therapy (34). Previous studies suggest that remotely delivered psychological interventions can be as effective as in-person treatments (35, 36). This approach offers a significant advantage for CNCP patients, allowing them to manage both the physical and psychological aspects of their condition while mitigating accessibility barriers.

1.4. Evidence Limitations

Despite promising developments, limitations remain in the current research on remote psychological interventions for chronic pain. Many studies report outcomes immediately post-intervention, which limits our understanding of long-term effectiveness and sustainability of remotely delivered psychosocial interventions (37-48). Additionally, the lack of blinding in participants for self-reported outcomes remains a methodological challenge inherent to psychotherapy trials, raising concerns about potential reporting bias and the internal validity of results (47-59).

Systematic reviews, aiming to summarize evidence from individual trials, also face methodological constraints. For example, Rosser et al. performed a systematic review and meta-analysis of remotely delivered psychotherapies for the management of chronic pain in 2023 (60). They restricted their intervention inclusion to those that were developed by or were under the supervision of a clinically trained psychologist and explicitly excluded those led by academically trained psychologists. Moreover, they were not able to compare the effectiveness of different psychological treatments since they used pairwise meta-analysis to compare psychological interventions to treatment as usual or other non-psychological interventions (e.g., education).

Another systematic review by Fisher et al. focused on chronic pain conditions in children and adolescents (61). This review did not assess the certainty of evidence and did not consider all patient-important outcomes. Additionally, the generalizability of their findings was limited by the few studies conducted on pediatric populations.

Remote psychotherapies involve a broad range of interventions, such as CBT, ACT, and mindfulness, which could be delivered via different modalities (e.g., mobile app, web-based, telephone-based). The interventions included in another review by Eccleston et al. were dominated by CBT, making it difficult to arrive at any conclusions about other types of psychotherapies (62). Moreover, they excluded interventions that were not delivered via a computer, such as telephone-delivered psychotherapies.

Given the limitations of the existing reviews, a network meta-analysis (NMA) offers a valuable approach as it enables the simultaneous comparison of multiple interventions, including those that have not been directly evaluated against each other in trials. By combining both direct and indirect evidence, an NMA maximizes the use of available data, increases statistical power, and allows for the ranking of interventions based on their relative effectiveness. Therefore, to fill the existing gaps in knowledge regarding the relative effectiveness of remotely delivered psychotherapies, we conducted a systematic review and an NMA to evaluate the impact of various remotely delivered psychotherapies on patient-important outcomes across different follow-up periods.

Chapter 2: METHODS

2.1. Protocol Registration and Standardized Reporting

Our study protocol was registered with PROSPERO (CRD42024566911). We adhered to the PRISMA-NMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for reporting systematic reviews incorporating Network Meta-analyses) guidelines for reporting our findings (63).

2.2. Data Sources

A health sciences librarian developed tailored search strategies for multiple databases, including MEDLINE, EMBASE, Cumulated Index in Nursing and Allied Health Literature (CINAHL), PsycINFO, and Cochrane Central Register of Controlled Trials (CENTRAL). The initial search covered all records from database inception until February 20th, 2024, with an update conducted on February 6th, 2025. No language restrictions were applied. Additionally, we examined reference lists from relevant trials and systematic reviews to identify further eligible studies. Details of the search strategy are provided in Appendix 1.

2.3. Study Selection and Eligibility Criteria

2.3.1. Types of studies:

We included randomized controlled trials (RCTs) of any design or sample size with no language or publication status restrictions. We excluded studies that did not measure at least one of our outcomes of interest.

2.3.2. Types of participants:

We included adults (≥16 years) diagnosed with chronic non-cancer pain (CNCP), defined as pain persisting for at least 3 months or classified by study authors as "chronic". We included participants with primary chronic pain conditions, such as musculoskeletal pain, or those with chronic pain as a key symptom of other conditions, such as diabetic neuropathy, fibromyalgia, irritable bowel syndrome, etc.

2.3.3. Types of interventions:

We included psychological interventions that contained recognizable psychotherapeutic content or were based on psychological theory and/or science. The delivery of psychotherapy was required to be predominantly remote, with no more than 20% of the total contact time involving an in-person therapist. Eligible trials could have utilized various technologies (e.g., internet-based platforms, smartphone applications, video calls) to deliver the intervention. The intervention had to engage participants in one or more psychologically informed therapeutic activities. Only interventions developed by a qualified psychologist or psychiatrist were considered eligible. Psychological interventions that solely provided educational material or passively consumed content (e.g., descriptions of psychological theory without application) were not eligible; however, they were included as comparators when assessed against an eligible remotely delivered psychotherapy and were categorized as alternative active control or usual care following clinical expert review.

Eligible comparators were waitlist controls, usual care (common medical care or pharmacotherapy), and active control (e.g., education, physical activity or physiotherapy, in-person psychotherapies). We considered treatment as usual and waitlist in the same group for analysis, if it was mentioned that the waitlist continued their usual care.

Two clinical psychologists independently and in duplicate evaluated the eligibility of interventions, categorizing them as distinct psychological interventions or active control conditions. Conflicts were resolved through discussion.

2.3.4. Types of outcomes:

We included studies that measured at least one patient-important outcome, as recommended by the initiative on methods, measurement, and pain assessment in clinical trials (IMMPACT) statement (64). Our outcomes of interest were as follows:

1) Pain intensity: measured using the Visual Analog Scale (VAS), the Numeric Rating Scale (NRS), or any other validated measures.

2) Physical function: measured using the physical functioning subscale of the 36-item Short Form Health Survey (SF-36), SF-12, or SF-6, WOMAC physical function, Pain Disability Index (PDI), or any other validated measures

3) Mental health: measured using the mental health subscale of the SF-36, SF-12, or SF-6, or any other validated measures

4) Quality of life (QoL): measured using the World Health Organization Quality-of-Life Scale (WHO-QoL), Health-Related Quality of Life (HR-QoL), EuroQol-5 Dimension (EQ-5D), or any other validated measures

5) Depression: measured using the Beck Depression Inventory (BDI), Patient Health Questionnaire (PHQ-9), Montgomery-Asberg Depression Rating Scale (MADRS), depression subscale of the Hospital Anxiety and Depression Scale (HADS), or Depression Anxiety Stress Scale (DASS), or any other validated measures

6) Anxiety: measured using the Beck Anxiety Inventory (BAI), Anxiety Sensitivity Index (ASI), General Anxiety Disorder-7 (GAD-7), or any other validated measures

7) Sleep quality: measured using the Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), or any other validated measures

8) Patient satisfaction rate: measured using any validated measure

8) Acceptability measured as all-cause dropout rate

2.3.5. Timing of outcome assessment:

We collected outcomes at three time points: (1) first evaluation after treatment ended (i.e., post-treatment follow-up); (2) longest follow-up within the 6-month after the end of treatment; (3) longest follow-up between 6 to 12 months after treatment ended. We planned to extract additional data at timepoint beyond 12 months, provided the data were available for both intervention and control groups; however, none of the included studies reported data for after 12 months.

2.4. Data Collection and Extraction Strategy

All reviewers underwent training and calibration exercises using standardized forms in DistillerSR (Evidence Partners, Ottawa, Canada, http://systematic-review.net). Reviewers screened titles and abstracts from the search results in duplicate and independently. The same pairs of reviewers assessed full texts of potentially relevant studies independently. Any discrepancies were resolved through discussion or, if necessary, third-party adjudication.

Before starting data abstraction, reviewers were calibrated using a pilot set of five eligible articles. After calibration, reviewers extracted relevant data, in pairs and independently, from eligible studies into standardized Excel spreadsheets. The primary researcher (SS) helped to reach a

consensus on disagreements. We collected data on study characteristics (first author's name, publication year, trial's design, country of origin, protocol registry), patient characteristics (mean age, percentage of females, percentage of veterans, pain condition, duration of pain), intervention characteristics (type of intervention, delivery method, number and duration of sessions, co-interventions), and patient-important outcomes. When a study reported an outcome on more than one scale, we gave preference to the scales most widely used to minimize heterogeneity.

2.5. Assessment of Risk of Bias

Reviewers independently and in duplicate assessed the risk of bias for the effect of assignment to the intervention (i.e., the intention-to-treat effect) in each trial using the Cochrane Risk of Bias tool (RoB 2.0). This tool classifies studies as having a high or low risk of bias or as raising some concerns across the following domains: (1) randomization process; (2) deviations from the intended interventions; (3) missing outcome data; (4) measurement of the outcome; and (5) selection of the reported results.

A study was rated as having a low risk of bias overall if all domains were classified as low risk, as having some concerns if all domains were rated either as low risk or as raising some concerns, and as having a high risk of bias if one or more domains were rated as high risk. The signaling questions from the archived version of RoB 2.0, embedded in a macro-enabled Excel tool for RoB assessments, were used for these evaluations (65). Any disagreements were resolved through discussion or, if necessary, adjudication by a senior reviewer (BS).

2.6. Data Synthesis

Continuous outcomes reported in at least two trials were pooled. Change scores from baseline to the end of follow-up, along with the associated 95% confidence interval (CI), were used when available. If change scores were not reported, they were calculated using baseline and follow-up scores along with the associated standard deviation (SD), derived using a correlation coefficient from trials at low risk of bias that reported change scores following the Cochrane handbook recommended approach (66). When only the median, range, and sample size were provided, the mean and SD were estimated using methods from the Chi et al. article (67).

When studies used different instruments to measure the same outcome, estimates were transformed to a common instrument range of scores using the method described by Thorlund et al. (68), after which the mean difference (MD) was used to pool treatment effects across studies. We transformed pain intensity to a 10 cm VAS, physical function to SF-36, mental health to SF-36, quality of life to EQ-5D, depression to PHQ-9, anxiety to GAD-7, and sleep disturbance to ISI. We did not have enough data reported on the patient satisfaction rate. The minimally important difference (MID) represents the smallest improvement in a treatment outcome that patients consider significant. For each outcome, we used the following MIDs: 1 cm for the 10 cm VAS (69), 10 points for the SF-36 physical function (70), 10 points for the SF-36 mental health (71), 3 points for the PHQ-9 (72), 3 points for the GAD-7 (73), 6 points for the ISI (74), and 0.1 for the EQ-5D (75).

To assess the feasibility of conducting a network meta-analysis (NMA), we evaluated the network's connectivity for each outcome, the number of available trials for each network/outcome, and the transitivity assumption. We evaluated transitivity by verifying that all interventions in the included

trials could be jointly randomizable. We also examined the distribution of potential effect modifiers (i.e., age, proportion of female participants, duration of chronic pain, and baseline pain levels) across the direct comparisons within the networks by using NMA-studio web application (https://www.nmastudioapp.com) (76). We used DerSimonian–Laird random-effects model for all pairwise direct comparisons and assessed statistical heterogeneity across direct comparisons using I^2 (77). When performing NMA was feasible, we used a frequentist random-effects model to perform NMA, assuming a common heterogeneity estimate (78, 79). We used the "design-by-treatment" model to examine the coherence assumption across the network, and we used the side-splitting method to assess local incoherence (80). The results of NMA were reported as MD with corresponding 95% CIs for continuous outcomes and as risk ratio (RR) and risk difference (RD) with corresponding 95% CIs for binary outcomes. We calculated the median risk in the intervention group by multiplying the corresponding RR and its 95% CI by the median risk from the usual care arms of the included trials and subtracted the usual care median risk to get the absolute risk difference (81, 82). We also calculated the difference in the proportion of patients achieving MID between interventions and usual care for continuous outcomes (68).

For each outcome, we calculated the surface under the cumulative ranking curve (SUCRA) values, the probability rankings, and mean ranks. For direct comparisons involving at least 10 trials, we assessed small-study effects using Egger's test for continuous outcomes and Harbord's test for binary outcomes (83, 84). We performed all NMA analyses using Stata (StataCorp., Version 18.0, College Station, TX, USA).

2.7. Subgroup and Sensitivity Analysis

We conducted subgroup analyses when feasible to investigate the effect of key prognostic factors on treatment effects, using network meta-regression. The predefined subgroups were as follows: (1) veteran vs. non-veteran status, (2) proportion of female participants, (3) delivery method (among the categories of web-based, smartphone app, phone call, video call, web- based + video call), (4) level of delivery automation (therapist interaction vs. no therapist involvement), and (5) risk of bias (low vs. high).

When we observed network maps with disconnected nodes (interventions), we performed component network meta-analysis (CNMA) to investigate the relative efficacy of individual intervention components both within and across treatments. We performed an additive CNMA in a frequentist framework, enabling us to isolate the effects of individual components rather than evaluating entire intervention packages (85). This method improved network connectivity and increased the precision of effect estimates by utilizing shared components across different treatment combinations (86). The CNMA analyses were performed using R statistical software (version 4.3.3; R Core Team 2024). Since standard NMA cannot be used for disconnected networks, we conducted the analyses within the frequentist framework using the *discomb()* function from the netmeta package in R (87). We used the usual care component as the reference intervention to present all comparative results, ensuring a consistent interpretation of the effects of components.

2.8. Certainty of Evidence

The certainty of evidence for each network estimate across different outcomes was assessed using the Confidence in Network Meta-Analysis (CINeMA) online tool [https://cinema.ispm.unibe.ch] (88, 89). CINeMA considers the following six domains based on methodological framework described in Nikolakopoulou et al. study: within-study bias (i.e., risk of bias), imprecision, inconsistency, indirectness, reporting bias (i.e., publication bias), and incoherence (88). To assess precision, we used network estimates, setting the MID as the threshold for imprecision in continuous outcomes and the null value (RR=1) for binary outcomes. We considered further downgrading each indirect comparison for intransitivity if we observed discrepancies in the distribution of effect modifiers across the contributing direct comparisons (90).

Chapter 3: RESULTS

3.1. Description of the Evidence

Through our literature search, we identified 5,303 records, of which the full texts of 246 studies were reviewed for eligibility. We included 66 trials (8,993 participants) in our review (*Figure 3.1*). The median for mean age of participants across the included studies was 49.2 years with an interquartile range (IQR) of 44.1 to 52 years. The overall percentage of female participants was 71.7%, and 6 studies reported that 100% of participants were veterans. The median for mean duration of pain reported across studies was 10.1 years (IQR = 8.7 to 13.7). Baseline pain scores were assessed on a 0–10 VAS scale and reported in 60 studies. The median for mean baseline pain scores across studies was 5.6 (IQR = 5.07 to 6.5), indicating moderate to severe pain at study entry. Studies were conducted across a wide range of countries, including the USA (n=20), Sweden (n=18), Australia (n=7), Canada (n=4), Germany (n=4), Spain (n=4), Ireland (n=2), New Zealand (n=2), the Netherlands (n=1), the UK (n=1), South Korea (n=1), Japan (n=1), and Belgium (n=1). Majority of studies (n=33, 50%) included mixed chronic pain conditions or multiple regions affected. Other pain diagnoses were as follows: back pain (n=10, 15.2%), fibromyalgia (n=9, 13.7%), arthritis (n=5, 7.6%), temporomandibular disorder (n=2, 3%), inflammatory bowel disease (n=2, 3%), Vestibulodynia (n=2, 3%), interstitial cystitis, spinal cord injury, and Vulvodynia (n=1 each).

We classified comparators as follows: usual care (continued their routine medical care or remained in waitlist, 49 trials); education (received active psychoeducation specific to their diagnosis, 8 trials); rehabilitation (focused on function recovery under the supervision of an occupational

therapist, 4 trials); ACT (in-person acceptance and commitment therapy, 1 trial); CBT (in-person cognitive and behavioral therapy, 4 trials); relaxation/mindfulness (regular sessions focused on reducing stress and relaxation techniques, 1 study); and combination of education with relaxation/mindfulness or exercise, 2 trials (exercise component was with specific plans that was considered out of the scoop of usual care).

Of 70 remotely delivered psychotherapies trial arms, 48 reported therapist interaction with a web-based being the most common platform for delivering psychotherapy (44 trials). Other platforms included: smartphone applications (n=7), videoconferencing (n=4), telephone-delivered (n=7). Two studies used blended platforms (website + videoconference), and six studies did not specify the mode of delivery. *Table 3.1* presents an overview of the characteristics of the trials included in this review.

3.2. Risk of Bias (RoB)

Of the 66 trials included in this review, 3 studies (4.5%) were at low overall risk of bias, 28 studies (42.4%) were at high risk, and 35 studies (53.0%) had some concerns.

For the randomization process, 56 studies (84.8%) were assessed as low risk, 9 studies (13.6%) had some concerns, and 1 study (1.5%) was at high risk. In the domain of deviations from intended interventions, 57 studies (86.4%) were at low risk, 6 studies (9.1%) had some concerns, and 3 studies (4.5%) were at high risk. Regarding missing outcome data, 40 studies (60.6%) were at low risk, 11 studies (16.7%) had some concerns, and 15 studies (22.7%) were at high risk. For measurement of the outcome, 6 studies (9.1%) were assessed as low risk, while 60 studies (90.9%)

had some concerns. In the domain assessing selection of the reported result, 29 studies (43.9%) were at low risk, 23 studies (34.8%) had some concerns, and 14 studies (21.2%) were at high risk. *Table 3.2* presents the detailed risk of bias assessment among included studies.

3.3. CNMA Results

For those networks containing separated intervention nodes, the additional effects of r-ACT and r-CBT individual components in incremental mean differences (iMD) or incremental risk ratios (iRR) are presented in the corresponding sections below using the additive CNMA model. The complete results of CNMA all components are presented in *Table 3.3*.

3.4. Pain Intensity

At Post-Treatment: A total of 57 trials were available for NMA of pain intensity at post-treatment. *Figure 3.2* presents the network of interventions. Network estimates indicated that r-ACT and r-CBT probably result in a slight reduction of pain intensity compared to usual care (MD: –0.59, 95% CI: –0.81 to –0.37, and MD: –0.36, 95% CI: –0.50 to –0.23, respectively, on a 0-10cm VAS; both moderate certainty). r-CBT combined with education and mindfulness may reduce pain intensity compared to usual care (MD: –1.60, 95% CI: –2.70 to –0.50, on a 0-10cm VAS), r-CBT alone (MD: –1.24, 95% CI: –2.34 to –0.13, on a 0-10cm VAS), in-person CBT alone (MD: –1.42, 95% CI: –2.73 to –0.10, on a 0-10cm VAS), and education alone (MD: –1.19, 95% CI: –2.35 to –0.03, on a 0-10cm VAS); all low certainty. In-person ACT alone (MD: –0.97, 95% CI: –1.79 to –0.15, on a 0-10cm VAS) and education alone (MD: –0.41, 95% CI: –0.79 to –0.03, on a 0-10cm VAS) may result in a slight reduction of pain intensity compared to usual care (both low certainty). *Table 3.4* provides effect estimates for all pairwise comparisons. We did not identify any

statistically significant incoherence in the network, except for the comparison of education versus usual care (p = 0.007; *Table 3.5*).

The proportion of patients achieving MID in pain reduction (1 cm reduction on a 0-10 VAS scale) at this time point was higher in r-CBT combined with education and mindfulness (35.24% higher, 95% CI: 10.84% to 53.66%), ACT (21.51% higher, 95% CI: 3.14% to 39.03%), r-ACT (12.87% higher, 95% CI: 7.93% to 17.87%), education (8.82% higher, 95% CI: 0.62% to 17.42%), and r-CBT (7.71% higher, 95% CI: 4.86% to 10.84%) compared to usual care. Considering the MID to be 1.4 points reduction (91) on a VAS scale, the proportion of patients achieving MID in pain reduction was higher in r-CBT combined with education and mindfulness (34.44% higher, 95% CI: 9.84% to 55.76%), ACT (20.17% higher, 95% CI: 2.79% to 38.59%), r-ACT (11.76% higher, 95% CI: 7.14% to 16.58%), education (7.96% higher, 95% CI: 0.55% to 16.13%), and r-CBT (6.94% higher, 95% CI: 4.34% to 9.84%) compared to usual care.

In the CNMA for pain intensity at post-treatment which included 62 studies, the inclusion of the average effect of r-ACT (iMD: –0.52, 95% CI: –0.73 to –0.30) and r-CBT (iMD: –0.32, 95% CI: –0.47 to –0.17) showed statistically significant pain reduction (on a 0-10cm VAS) across all combinations.

First Follow-Up (up to 6 months post-treatment): At this follow-up time, 26 trials reported pain intensity. *Figure 3.3* presents the network of interventions. Results showed that r-ACT and r-CBT probably result in a slight reduction of pain intensity compared to usual care (MD: –0.52, 95% CI: –0.81 to –0.24, and MD: –0.19, 95% CI: –0.32 to –0.06, respectively; on a 0-10cm VAS, both moderate certainty). r-CBT combined with education, mindfulness, and exercise may reduce pain

intensity slightly compared to usual care (MD: –0.74, 95% CI: –1.46 to –0.02; on a 0-10cm VAS, low certainty). r-ACT and r-CBT combined with education, mindfulness, and exercise may reduce pain intensity slightly compared to in-person CBT (MD: –0.80, 95% CI: –1.51 to –0.09, and MD: –1.02, 95% CI: –1.98 to –0.05, respectively; on a 0-10cm VAS, both low certainty) and education (MD: –0.65, 95% CI: –1.04 to –0.26, and MD: –0.86, 95% CI: –1.70 to –0.03, respectively; on a 0-10cm VAS, both low certainty). *Table 3.6* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.7*).

The proportion of patients achieving MID in pain reduction (1 cm reduction on a 0-10 VAS scale) at this time point was higher in r-CBT combined with education, mindfulness, and exercise (15.98% higher, 95% CI: 0.42% to 30.79%), r-ACT (11.19% higher, 95% CI: 5.11% to 17.49%), and r-CBT (4.04% higher, 95% CI: 1.26% to 6.84%) compared to usual care. Considering the MID to be 1.4 points reduction (91) on a VAS scale, the proportion of patients achieving MID in pain reduction was higher in r-CBT combined with education, mindfulness, and exercise (15.35% higher, 95% CI: 0.39% to 30.86%), r-ACT (10.61% higher, 95% CI: 4.76% to 16.87%), and r-CBT (3.75% higher, 95% CI: 1.17% to 6.41%) compared to usual care.

The results of CNMA at this follow-up (CNMA of 27 studies) showed that the inclusion of the average effect of r-ACT (iMD: –0.49, 95% CI: –0.81 to –0.18) showed statistically significant pain reduction (on a 0-10cm VAS) across all combinations.

Second Follow-Up (6 to 12 months post-treatment): Eight trials reported pain intensity at this follow-up. *Figure 3.4* presents the network of interventions. No intervention demonstrated

statistically significant reductions in pain intensity (*Table 3.8*). We did not find any statistically significant incoherence in the network (*Table 3.9*).

In the CNMA at this follow-up (CNMA of 12 studies), no component showed statistically significant effects on pain reduction.

3.5. Physical Functioning (SF subscale)

At post-treatment: A total of 39 trials were available for NMA of physical function at post-treatment. *Figure 3.5* presents the network of interventions. Network estimates indicated that r-ACT probably result in a slight improvement in physical function (MD: 5.76, 95% CI: 2.67 to 8.86, on a 0-100 points SF-36; moderate certainty), and r-CBT may improve physical function slightly (MD: 3.10, 95% CI: 1.22 to 4.97, on a 0-100 points SF-36; low certainty), both compared to usual care. r-CBT combined with education, mindfulness, and exercise may improve physical function compared to usual care (MD: 11.89, 95% CI: 3.10 to 20.67, on a 0-100 points SF-36; low certainty). *Table 3.10* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.11*).

The proportion of patients achieving MID in physical function improvement (10 points increase on a 0-100 SF-36 scale) at this time point was higher in r-CBT combined with education, mindfulness, and exercise (27.33% higher, 95% CI: 6.75% to 45.85%), r-ACT (12.88% higher, 95% CI: 5.79% to 20.21%), and r-CBT (6.75% higher, 95% CI: 2.6% to 11.04%) compared to usual care.

In the CNMA for physical functioning at post-treatment which included 42 studies, the inclusion of the average effect of r-ACT (iMD: 5.66, 95% CI: 2.83 to 8.49) and r-CBT (iMD: 3.23, 95% CI:

1.42 to 5.03) showed statistically significant improvements in physical function (on a 0-100 points SF-36) across all combinations.

First Follow-Up (up to 6 months post-treatment): Seventeen trials reported physical function at the first follow-up. *Figure 3.6* presents the network of interventions. Results showed that r-ACT may result in a slight improvement in physical function compared to usual care (MD: 5.66, 95% CI: 0.66 to 10.66, on a 0-100 points SF-36; low certainty). Also, r-ACT may improve physical function compared to in-person CBT (MD: 11.78, 95% CI: 1.91 to 21.65, on a 0-100 points SF-36; low certainty) and may result in a slight improvement in physical function compared to education (MD: 6.67, 95% CI: 0.89 to 12.45, on a 0-100 points SF-36; low certainty). *Table 3.12* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network *(Table 3.13*).

The proportion of patients achieving MID in function improvement (10 points increase on a 0-100 SF-36 scale) at this time point was higher in r-ACT (13.81% higher, 95% CI: 1.52% to 26.65%) compared to usual care.

The results of CNMA at this follow-up (CNMA of 18 studies), showed that the inclusion of the average effect of r-ACT was associated with statistically significant improvements in physical function across all combinations (iMD: 5.37, 95% CI: 1.28 to 9.45, on a 0-100 points SF-36).

Second Follow-Up (6 to 12 months post-treatment): Five trials reported physical function at the second follow-up. *Figure 3.7* presents the network of interventions. No intervention showed statistically significant benefit compared to usual care. *Table 3.14* provides effect estimates for all pairwise comparisons. The network was coherent-by-definition with no closed loop of evidence.

In the CNMA at this follow-up (CNMA of 7 studies), no component showed statistically significant effects on physical function improvement.

3.6. Mental Health (SF subscale)

At Post-Treatment: A total of 10 trials were available for NMA of mental health at post-treatment. *Figure 3.8* presents the network of interventions. We observed no statistically significant benefit for any intervention compared to usual care. *Table 3.15* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.16*). In the CNMA for mental health at post-treatment which included 11 studies, no individual component demonstrated statistically significant effects.

First Follow-Up (up to 6 months post-treatment): Six studies reported mental health at the first follow-up. *Figure 3.9* presents the network of interventions. We observed no statistically significant benefit for any intervention compared to usual care. *Table 3.17* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.18*).

Second Follow-Up (6 to 12 months post-treatment): We were not able to perform NMA or conventional meta-analysis for this follow-up time. Three studies reported mental health at this time point: Carmody et al (2013) compared r-CBT with education, showing significant gains in mental health (collected on a SF-12 scale) were achieved in both groups at 26 weeks post-treatment, with a statistically significant effect for time (β=0.050, 95% CI 0.002 to 0.098, p=0.04). They reported that the treatment × time interaction was not statistically significant, suggesting that the trajectory of change was similar in both groups (92). Heapy et al (2017) compared r-CBT with in-

person CBT (least-squares mean estimate from adjusted mixed model: 2.43, 95% CI: -0.96 to 5.82, p=0.16), showing no statistically significant deference in mental health (on a SF-36 scale) between groups at 26 weeks post-treatment (93). Calner et al (2017) reported mental health on a SF-36 scale showing no statistically significant difference between r-CBT combined with rehabilitation and rehabilitation alone (adjusted treatment effect: 3.2, 95% CI: –3.9 to 10.39, p = 0.37) at 32 weeks post-treatment (94).

3.7. Quality of Life (QoL)

At post-treatment: A total of 16 trials were available for NMA of quality of life at post-treatment. *Figure 3.10* presents the network of interventions. Results showed that r-ACT and r-CBT probably result in a slight improvement in QoL compared to usual care (MD: 0.06, 95% CI: 0.02 to 0.10, and MD: 0.05, 95% CI: 0.03 to 0.08, respectively, on a 0-1 points EQ-5D; both moderate certainty). *Table 3.19* provides effect estimates for all pairwise comparisons. The network was coherent-by-definition with no closed loop of evidence.

The proportion of patients achieving MID in QoL improvement (0.1 points increase on a 0-1 EQ-5D scale) at this time point was higher in r-ACT (14.27% higher, 95% CI: 4.46% to 24.79%) and r-CBT (11.73% higher, 95% CI: 6.81% to 19.49%) compared to usual care.

In the CNMA for QoL at post-treatment which included 18 studies, the inclusion of the average effect of r-ACT (iMD: 0.07, 95% CI: 0.03 to 0.11) and r-CBT (iMD: 0.05, 95% CI: 0.02 to 0.07) showed statistically significant improvements in mental health (on a 0-100 points SF-36) across all combinations.

First Follow-Up (up to 6 months post-treatment): Not enough data were available to perform NMA. However, we conducted two pairwise conventional meta-analyses comparing r-CBT to usual care and r-ACT to education (*Table 3.20*). Meta-analysis of three studies showed that r-CBT likely results in a slight improvement in QoL compared to usual care (MD: 0.03, 95% CI: 0.01 to 0.06, on a 0-1 points EQ-5D; moderate certainty; *Figure 3.11*). Meta-analysis of two studies indicated that r-ACT may result in little to no difference in QoL relative to education (MD: 0.01, 95% CI: -0.01 to 0.04, on a 0-1 points EQ-5D; low certainty; *Figure 3.12*).

Second Follow-Up (6 to 12 months post-treatment): Not enough data were available to perform NMA or conventional meta-analysis at the second follow-up. Three studies reported QoL at this time point: Gasslander et al (2022) compared r-CBT with usual care, showing statistically significant benefits of r-CBT over usual care on quality of life (measured on quality of life inventory [QOLI] scale, range -6 to 6) at 48 weeks post-treatment (analysis of covariance F statistics = 11.85, $p = 0.001$) (95). Braun et al (2022) reported QoL on assessment of quality of life - 8 dimensions (AQoL-8D) scale (range 35 to 175) and compared r-ACT with education, showing statistically significant benefits for r-ACT over education ($\beta = 0.54$, 95% CI: 0.19 to 0.89, $p = 0.003$, Cohen's d: 0.63, 95% CI: 0.18 to 1.08) at 41 weeks post-treatment (96). Bennell et al (2018) reported QoL on assessment of quality of life version 2 (AQoL II) scale (range -0.04 to 1) and compared r-CBT combined with education and exercise with education and exercise together, showing no statistically significant difference between groups (MD: 0.00, 95% CI: -0.03 to 0.04, $p = 0.83$) at 44 weeks post-treatment (97).

3.8. Depression

At Post-Treatment: A total of 50 trials were available for NMA of depression at post-treatment. *Figure 3.13* presents the network of interventions. Results showed that r-ACT (MD: –1.75, 95% CI: –2.46 to –1.05, on a 0-27 points PHQ-9) and r-CBT (MD: –1.80, 95% CI: –2.32 to –1.28, on a 0-27 points PHQ-9) probably result in a slight reduction in depression compared to usual care (both moderate certainty). Also, CBT (MD: –2.30, 95% CI: –3.78 to –0.81, on a 0-27 points PHQ-9) and education (MD: –1.98, 95% CI: –3.12 to –0.84, on a 0-27 points PHQ-9) may result in a slight reduction in depression compared to usual care (both low certainty). *Table 3.21* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.22*).

The proportion of patients achieving MID in depression reduction (3 points reduction on a 0-27 PHQ-9 scale) at this time point was higher in CBT (17.26% higher, 95% CI: 5.78% to 28.93%), education (14.74% higher, 95% CI: 6.01% to 23.76%), r-CBT (13.33% higher, 95% CI: 9.31% to 17.42%), and r-ACT (12.94% higher, 95% CI: 7.57% to 18.53%) compared to usual care.

In the CNMA for depression at post-treatment which included 52 studies, the inclusion of the average effect r-ACT (iMD: –1.60, 95% CI: –2.27 to –0.93) and r-CBT (iMD: –1.64, 95% CI: –2.14 to –1.13) showed statistically significant reduction in depression (on a 0-27 points PHQ-9) across all combinations.

First Follow-Up (up to 6 months post-treatment): Twenty-two trials reported depression at the first follow-up (up to 6 months post-treatment). *Figure 3.14* presents the network of interventions. Results showed that r-CBT (MD: –0.87, 95% CI: –1.39 to –0.35, on a 0-27 points PHQ-9) and r-

ACT (MD: –1.52, 95% CI: –2.31 to –0.74, on a 0-27 points PHQ-9) probably result in a slight reduction in depression compared to usual care (both moderate certainty). In addition, r-ACT probably results in a slight reduction in depression compared to education (MD: –1.19, 95% CI: –2.05 to –0.32, on a 0-27 points PHQ-9; moderate certainty). *Table 3.23* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.24*).

The proportion of patients achieving MID in depression reduction (3 points reduction on a 0-27 PHQ-9 scale) at this time point was higher in r-ACT (12.07% higher, 95% CI: 5.73% to 18.64%) and r-CBT (6.77% higher, 95% CI: 2.67% to 11.00%) compared to usual care.

In the CNMA at this follow-up (CNMA of 23 studies), the inclusion of the average effect r-ACT (iMD: –1.46, 95% CI: –2.19 to –0.72) and r-CBT (iMD: –0.83, 95% CI: –1.27 to –0.39) showed statistically significant reduction in depression (on a 0-27 points PHQ-9) across all combinations.

Second Follow-Up (6 to 12 months post-treatment): Seven trials reported depression at the second follow-up (6 to 12 months post-treatment). *Figure 3.15* presents the network of interventions. Results showed that r-CBT likely results in a slight reduction in depression compared to usual care (MD: –1.22, 95% CI: –2.36 to –0.07, on a 0-27 points PHQ-9; moderate certainty). *Table 3.25* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.26).*

The proportion of patients achieving MID in depression reduction (3 points reduction on a 0-27 PHQ-9 scale) at this time point was higher in r-CBT (11.2% higher, 95% CI: 0.59% to 22.91%) compared to usual care.

In the CNMA at this follow-up (CNMA of 8 studies), no component showed statistically significant effects on depression.

3.9. Anxiety

At Post-Treatment: A total of 38 trials were available for NMA of anxiety at post-treatment. *Figure 3.16* presents the network of interventions. Results showed that r-ACT (MD: –0.84, 95% CI: –1.64 to –0.03, on a 0-21 points GAD-7) and r-CBT (MD: –1.41, 95% CI: –1.93 to –0.89, on a 0-21 points GAD-7) probably result in a slight reduction in anxiety compared to usual care (both moderate certainty). Also, r-CBT likely results in a slight reduction in anxiety compared to education (MD: –1.38, 95% CI: –2.70 to –0.06, on a 0-21 points GAD-7; moderate certainty). *Table 3.27* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.28*).

The proportion of patients achieving MID in anxiety reduction (3 points reduction on a 0-21 GAD-7) at this time point was higher in r-CBT (11.7% higher, 95% CI: 7.2% to 16.35%) and r-ACT (6.78% higher, 95% CI: 0.23% to 13.74%) compared to usual care.

In the CNMA for anxiety at post-treatment which included 40 studies, the inclusion of the average effect of r-CBT showed statistically significant reduction in anxiety across all combinations (iMD: –1.27, 95% CI: –1.77 to –0.76, on a 0-21 points GAD-7).

First Follow-Up (up to 6 months post-treatment): Fifteen trials reported anxiety at the first follow-up (up to 6 months post-treatment). *Figure 3.17* presents the network of interventions. Results showed that r-CBT probably results in a slight reduction in anxiety compared to usual care (MD: –0.69, 95% CI: –1.11 to –0.26, on a 0-21 points GAD-7; moderate certainty). In addition, r-ACT probably results in a slight reduction in anxiety compared to education (MD: –0.68, 95% CI: –1.34 to –0.02, on a 0-21 points GAD-7; moderate certainty). *Table 3.29*. provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.30*).

The proportion of patients achieving MID in anxiety reduction (3 points reduction on a 0-21 points GAD-7) at this time point was higher in r-CBT (6.53% higher, 95% CI: 2.37% to 10.86%) compared to usual care.

In the results of CNMA at this follow-up (CNMA of 16 studies), the inclusion of the average effect of r-CBT showed statistically significant reduction in anxiety across all combinations (iMD: –0.47, 95% CI: –0.87 to –0.07, on a 0-21 points GAD-7).

Second Follow-Up (6 to 12 months post-treatment): Five trials reported anxiety at the second follow-up (6 to 12 months post-treatment). *Figure 3.18* presents the network of interventions. Results showed that r-ACT may result in a slight reduction in anxiety compared to usual care (MD: –1.98, 95% CI: –3.87 to –0.09, on a 0-21 points GAD-7) and education (MD: –2.56, 95% CI: –4.32 to –0.80, on a 0-21 points GAD-7), both with low certainty. *Table 3.31* provides effect estimates for all pairwise comparisons. We were not able to statistically test for incoherence due to the absence of any closed loops.

The proportion of patients achieving MID in anxiety reduction (3 points reduction on a 0-21 points GAD-7) at this time point was higher in r-ACT (14.8% higher, 95% CI: 0.63% to 29.28%) compared to usual care.

In the results of CNMA at this follow-up (CNMA of 6 studies), the inclusion of the average effect of r-ACT showed statistically significant reduction in anxiety across all combinations (iMD: –1.98, 95% CI: –3.87 to –0.09, on a 0-21 points GAD-7).

3.10. Sleep Quality

At Post-Treatment: A total of 13 trials were available for NMA of sleep quality at post-treatment.*Figure 3.19* presents the network of interventions. Results showed that r-ACT probably results in a slight reduction in insomnia compared to usual care (MD: –2.51, 95% CI: –4 to –1.02, on a 0-28 points ISI, moderate certainty). Also, education may result in a slight reduction in insomnia compared to usual care (MD: –3.71, 95% CI: –7.06 to –0.36, on a 0-28 points ISI, low certainty). *Table 3.32* provides effect estimates for all pairwise comparisons. We were not able to statistically test for incoherence due to the absence of any closed loops.

The proportion of patients achieving MID in insomnia reduction (6 points reduction on a 0-28 ISI scale) at this time point was higher in education (20.2% higher, 95% CI: 1.55% to 43.1%) and r-ACT (12.73% higher, 95% CI: 4.64% to 22.1%) compared to usual care.

First Follow-Up (up to 6 months post-treatment): Six trials reported sleep quality at the first follow-up (up to 6 months post-treatment). *Figure 3.20* presents the network of interventions. No intervention showed statistically significant benefit compared to usual care. *Table 3.33* provides

effect estimates for all pairwise comparisons. We were not able to statistically test for incoherence due to the absence of any closed loops.

Second Follow-Up (6 to 12 months post-treatment): Not enough data were available to perform NMA or conventional meta-analysis at the second follow-up. Three studies reported sleep quality at this time point: Gasslander et al (2022) reported sleep quality on the 0-28 ISI scale and compared r-CBT with usual care (analysis of covariance F statistics = 1.66, p = 0.200), showing no statistically significant difference between groups at 48 weeks post-treatment (95). Braun et al (2022) reported sleep quality on the 0-28 ISI scale and compared r-ACT with education, showing no statistically significant difference between groups (β=0.06, 95% CI: −0.34 to 0.46, p = 0.771, Cohen's d: 0.002, 95% CI: –0.43 to 0.44) at 41 weeks post-treatment (96). Heapy et al (2017) compared r-CBT with in-person CBT (least-squares mean estimate from adjusted mixed model: 0.37, 95% CI: -1.22 to 1.97, p=0.64), showing no statistically significant deference in sleep quality (on a 0-21 PSQI scale) between groups at 26 weeks post-treatment (93).

3.11. Acceptability

A total of 60 trials were available for NMA of all-cause dropout (acceptability). *Figure 3.21* presents the network of interventions. Results showed that r-ACT and r-CBT probably increase the dropout rate compared to usual care (RR: 1.55, 95% CI: 1.18 to 2.03, RD: 7.33% more patients, 95% CI: 2.4% to 13.73%; RR: 1.46, 95% CI: 1.18 to 1.81, RD: 6.13% more patients, 95% CI: 2.4% to 10.80%; both low certainty). *Table 3.34* provides effect estimates for all pairwise comparisons. We did not find any statistically significant incoherence in the network (*Table 3.35*).

In the CNMA for dropout rates which included 66 studies, the inclusion of the average effect of following components was associated with statistically significant higher risks of dropout rates across all combinations: r-ACT (iRR: 1.38, 95% CI: 1.12 to 1.70) and r-CBT (iRR: 1.37, 95% CI: 1.14 to 1.66).

3.12. Additional Analyses

The results of the NMA-regression analyses did not show any evidence of effect modification for risk of bias, veteran status, and treatment delivery method. The proportion of female participants was a statistically significant effect modifier for the following:

For pain intensity at post-treatment, a higher percentage of female participants was associated with greater pain reduction following r-ACT (coefficient = –0.017, $p = 0.004$; *Table 3.36*) and r-CBT (coefficient = –0.005, $p = 0.018$; *Table 3.36*).

For physical function at first follow-up, a higher percentage of female participants was associated with less improvement in function following r-ACT (coefficient = –0.670, $p = 0.022$; *Table 3.37*).

For depression at post-treatment, a higher percentage of female participants was associated with greater reduction in depression following r-CBT (coefficient = –0.037, $p = 0.026$; *Table 3.38*).

For dropout rates, a higher percentage of female participants was associated with lower dropout rates following education (coefficient = –0.017, $p = 0.016$) and r-CBT (coefficient = –0.013, $p = 0.011$), and with higher dropout rates following the combination of r-CBT, education, and mindfulness (coefficient = 0.032, $p = 0.002$; *Table 3.39*).

Additionally, therapist interaction was a statistically significant effect modifier for the effect of r-CBT combined with education and mindfulness on dropout rates. The presence of therapist interaction was associated with lower dropout rates (coefficient = –2.182, $p = 0.005$; *Table 3.40*). For each network, SUCRA values, treatment probabilities of being the best, and mean treatment ranks are presented in the appendices (Appendix 2-19). The details of the confidence in evidence assessments are also presented for each network in the appendices (Appendix 20-37).

Chapter 4: DISCUSSION

4.1. Major Findings

This review included 66 trials with 8,993 participants. At post-treatment, we found moderate certainty evidence that compared to usual care, r-CBT and r-ACT likely result in a slight reduction of pain intensity (7.71% and 12.87% more patients achieved MID, respectively), a slight improvement in quality of life (11.73% and 14.27% more patients achieved MID, respectively), a slight reduction in depression (13.33% and 12.94% more patients achieved MID, respectively), and a slight reduction in anxiety (11.7% and 6.78% more patients achieved MID, respectively). Compared to usual care, r-ACT probably results in a slight improvement in physical function (12.88% more patients achieved MID, moderate certainty) and r-CBT may result in a slight improvement in physical function (6.75% more patients achieved MID, low certainty). NMA results of sleep quality showed that r-ACT probably result in a slight reduction in insomnia compared to usual care (12.73% more patients achieved MID; moderate certainty). We did not find any statistically significant effects on mental health by any intervention.

At the first follow-up (up to 6 months post-treatment), results showed the following: r-CBT and r-ACT probably result in a slight reduction of pain intensity (4.04% and 11.19% more patients achieved MID, respectively; both moderate certainty), r-ACT may result in a slight improvement in physical function (13.81% more patients achieved MID; low certainty), r-CBT and r-ACT probably result in a slight reduction in depression (6.77% and 12.07% more patients achieved MID, respectively; both moderate certainty), and r-CBT probably results in a slight reduction in anxiety (6.53% more patients achieved MID; moderate certainty); all compared to usual care.

At the second follow-up (6 to 12 months), moderate certainty evidence showed that r-CBT likely results in a slight reduction in depression compared to usual care (11.2% more patients achieved MID) and low certainty evidence showed that r-ACT may result in a slight reduction in anxiety compared to usual care (14.8% more patients achieved MID). No other statistically significant results were observed at 6 to 12 months follow-up.

For acceptability, r-CBT and r-ACT may have higher dropout rates compared to usual care (low certainty). NMA-regression analyses indicated that the higher proportion of female participants and therapist involvement may improve treatment effects; however, these effects were not consistent across all outcomes and time points.

In addition to the primary NMA, conducting the CNMA allowed us to include all available studies, even those not directly connected to the main network. This approach enabled us to incorporate a broader range of evidence, increasing the power to investigate the effects of various treatment components. The additive CNMA results were consistent with NMA results showing that the inclusion of r-ACT and r-CBT were associated with statistically significant pain reduction at post-treatment, physical function improvement at post-treatment, depression reduction at post-treatment and at the first follow-up, quality of life improvement at post-treatment, and higher dropout rates. The inclusion of r-ACT was associated with statistically significant pain reduction at the first follow-up, physical function improvement at the first follow-up, and anxiety reduction at the second follow-up. The inclusion of r-CBT was associated with statistically significant reduction in anxiety at post-treatment and the first follow-up.

4.2. Strengths and Limitations

Our study followed a registered protocol and adhered to PRISMA-NMA guidelines, ensuring transparency and reproducibility. This is the first NMA evaluating the comparative effectiveness and acceptability of multiple remote psychotherapies for patients dealing with chronic pain. We included all chronic non-cancer pain diagnoses, regardless of etiology, as long as there was no specific pathological cause such as cancer, ensuring broad applicability.

We ensured a comprehensive search by collaborating with an experienced health sciences librarian to design a search strategy and retrieve results. Additionally, we included a broad range of patient-important outcomes and collected reported outcomes at three different timepoints of immediately post-treatment, up to 6 months follow-up, and 6 to 12 months follow-up to explore the sustainability of observed effects. When possible, we investigated the impact of effect modifiers by running subgroup analyses. We reported the effect of adding individual components (i.e., ACT, CBT, education, mindfulness, exercise, rehabilitation, r-ACT, and r-CBT) by performing CNMA, which allowed us to explore the contribution of components that were not directly connected in the network. We also explored and reported the confidence in evidence using the CINeMA approach.

There are some limitations associated with this study. Few studies reported outcomes beyond 6 months, limiting conclusions about long-term effectiveness. Only 3 of 66 studies were rated as low risk of bias (97-99) and the majority of studies had some concerns or high risk of bias, reducing the level of certainty in observed results. Insufficient data for certain outcomes (e.g., mental health, quality of life, and sleep quality), especially at the second follow-up, limited the ability to perform any statistical analysis. It should be noted that almost all evaluated outcomes in this study were

self-reported outcomes, and the lack of participant blinding in included trials may have introduced bias in observed effects. We tried to account for this by rating down the certainty of evidence when the majority of studies in each comparison were at high risk of bias. The present study focused on adults; therefore, findings may not be generalizable to children or adolescents.

4.3. Comparisons with Other Reviews

Our findings are consistent with and extend the conclusions of several prior systematic reviews and meta-analyses evaluating remotely delivered psychotherapies for chronic pain.

Rosser et al. (2023) conducted a Cochrane review of remotely delivered psychological therapies for chronic pain in adults (60). They included only interventions developed or supervised by clinically trained psychologists and performed pairwise meta-analyses. Similar to our findings, they suggested small benefits of remote psychological therapies (particularly CBT) on pain and disability outcomes. However, observed benefits were not sustained at follow-ups. They did not have enough evidence to explore the effects of other treatments (e.g., ACT) with confidence. Moreover, they did not compare different types of psychotherapies or their additional components. Our NMA builds on this by including interventions developed and supervised by all psychologists and enabling simultaneous comparisons across multiple interventions, including r-CBT, r-ACT, and their combination with education, mindfulness, and exercise. We also evaluated longer-term outcomes, which were not comprehensively addressed in Rosser et al.'s review.

Fisher et al. (2015) reviewed remotely delivered psychotherapies for children and adolescents with chronic and recurrent pain (61). They found that for most outcomes, there was either no clear benefit of such therapies at post-treatment or follow-up, or insufficient evidence to draw

conclusions, except for a reduction in headache severity immediately at post-treatment. They rated the quality of evidence to be very low, limiting the certainty of estimates. This suggest that there were not enough studies conducted on this topic in children and adolescents, limiting the ability to investigate the benefits of remotely delivered psychotherapies in these populations. While our review focused on adults, we similarly observed that the effects of treatments tend to diminish over time, with fewer statistically significant effects observed at long-term follow-ups compared to post-treatment.

Zandieh et al. (2024) conducted a meta-analysis comparing therapist-guided remote CBT with in-person CBT across various conditions, including 3 studies on chronic pain (36). Overall, they found no statistically significant difference in the effectiveness of in-person versus remote delivered psychotherapies (standardized mean difference = –0.02, 95% CI: –0.12 to 0.07). Our findings aligned with this, with no statistically significant differences observed between CBT and r-CBT in the NMA results. However, it is worth mentioning that the focus of our review was remote therapies and in-person therapies were only included as comparator arms.

4.4. Implications for Practice

Moderate certainty evidence suggests that r-CBT and r-ACT likely result in slight reductions in pain intensity, depression, and anxiety and slight improvements in physical function and quality of life compared to usual care in adults with CNCP. These effects were most evident at post-treatment and persisted, to a lesser extent, up to 6 months. r-ACT also showed a slight reduction in insomnia, only at post-treatment. These findings suggest that given their accessibility and feasibility compared to in-person care, r-CBT and r-ACT could be considered as additional interventions to

usual care for managing chronic pain and its associated symptoms in adults with CNCP. The higher dropout rates observed with r-CBT and r-ACT compared to usual care highlights the need for strategies to improve patient engagement and adherence.

4.5. Implications for Research

The current body of evidence is largely derived from trials with some methodological concerns and high risk of bias, with few studies reporting long-term outcomes. Future research should prioritize rigorously conducted, large-scale randomized controlled trials with extended treatment sessions and follow-up periods to assess the sustainability of treatment effects. There is also a need to identify and validate potential effect modifiers, such as gender composition and therapist involvement, which were found to occasionally influence outcomes in our NMA-regression analyses.

4.6. Conclusion

This review included 66 trials (8,993 participants) and provided moderate certainty evidence that remotely delivered psychotherapies (particularly r-CBT and r-ACT) likely result in slight benefits in key outcomes such as pain intensity, physical functioning, quality of life, depression, and anxiety with higher proportion of patients achieving MID when compared to usual care at post-treatment. Furthermore, dropout rates were higher for r-CBT and r-ACT compared to usual care. The CNMA allowed us to include those studies disconnected from the network maps, confirming with a stronger body of evidence that the inclusion of components such as r-ACT and r-CBT was associated with statistically significant effects on pain reduction, physical function improvement, quality of life improvement, depression reduction, and anxiety reduction. These findings showed

the slight benefits of remotely delivered psychotherapies for management of CNCP and underscore the importance of enhancing intervention design, delivery method, and patient engagement to improve observed effects. Future research should focus on improving methodological rigor, exploring long-term outcomes, and identifying patient and intervention characteristics that predict better responses.

Figure 3.1. Flow diagram of the study selection process.

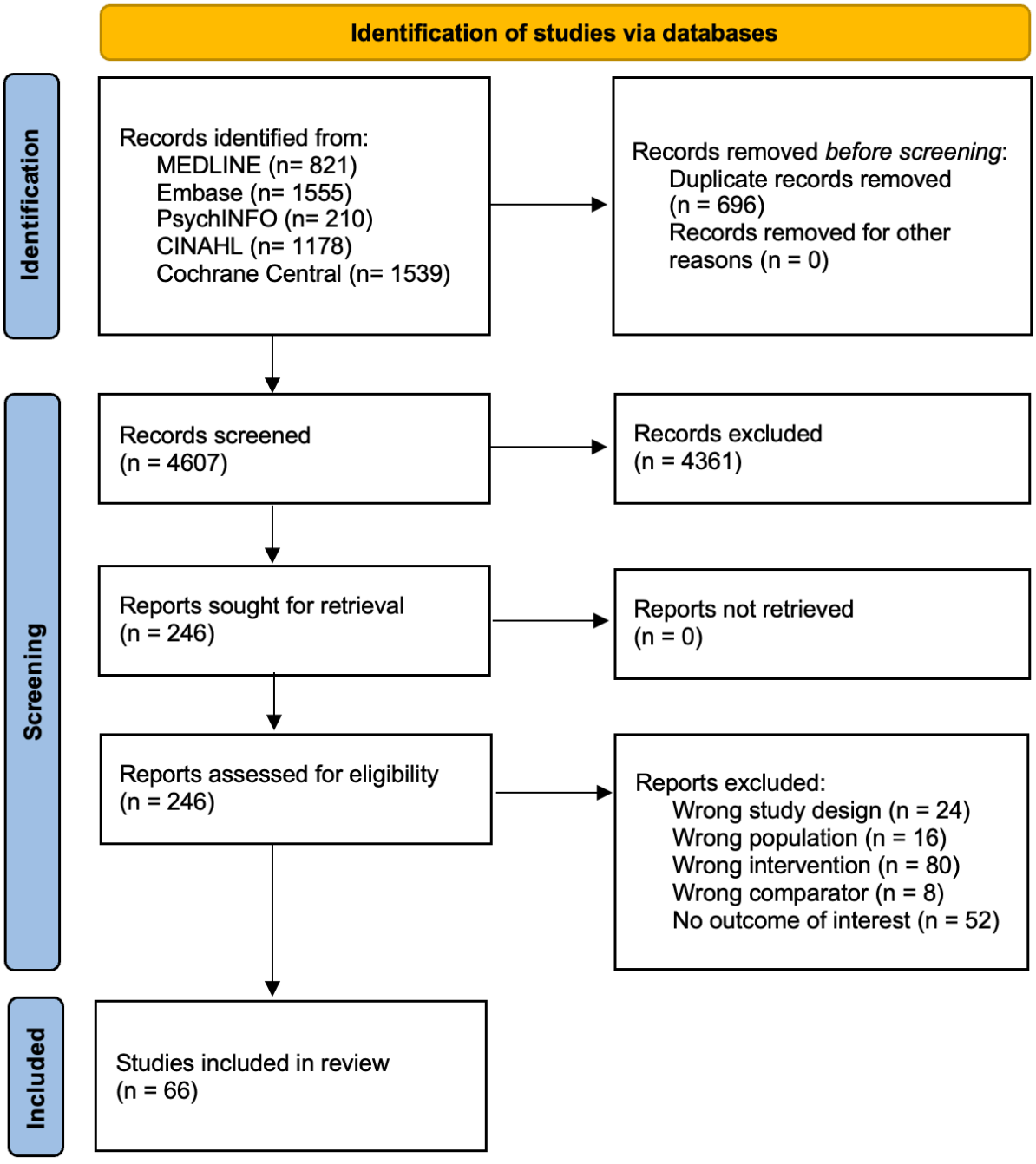


Table 3.1. Characteristics of included studies.

Study	Country	Age (years, mean ± SD)	% Female	% Veteran	Pain Diagnosis	Pain Duration (years, mean ± SD)	Baseline Pain	Sample Size, Intervention Details	Therapist Interaction	Follow-up Time
Ang 2010 (100)	USA	48.9 ± 10.92	100	NR	Fibromyalgia	12 ± 6.26	7.7 ± 1.6	n=17, r-CBT (6 weekly sessions, 30-40 min per session, platform: telephone)	Yes	12 weeks
								n=15, usual care	NA	
Baumeister 2021 (98)	Germany	49.9 ± 9.36	60	NR	Back pain	At least 6 months	1.8 ± 0.72	n=104, r-CBT (6 weekly sessions and 3 optional ones, 54 min per session, platform: website)	Yes	24 weeks
								n=105, usual care	NA	
Bendelin 2021 (101)	Sweden	36.13 ± 9.68	85.4	NR	Chronic pain (e.g., widespread pain including fibromyalgia, low back pain, neck-shoulder pain, etc.)	7.1 ± 7	6.7 ± 1.75	n=61, r-ACT + rehabilitation (6 weekly sessions, and 11 weekly sessions after the rehabilitation program, length of sessions: NR, platform: website; rehabilitation program same as below)	Yes	48 weeks
								n=61, rehabilitation (24 sessions, 4 sessions per week, total 6 weeks, 60-120 min per session, platform: on site)	NA	
Bennell 2018 (97)	Australia	61.25 ± 7.15	57	NR	Hip pain	At least 3 months on most days of the past month	5.1 ± 1.62	n=73, r-CBT+ education + exercise (8 weekly CBT sessions, 35-45 min per session, platform: website)	No	52 weeks
								n=71, active control: education + exercise (8 educational online sessions and 5 face-to-face 30-min individual home-based exercise sessions with a physiotherapist)	NA	

Bostrom 2023 (102)	Norway	49 ± 9.33	81.1	NR	Chronic pain	at least 3 months: 9.6% less than 3 years, 5.6% 3-5 years, 16% 5-10 years, and 72.8% more than 10 years	7.3 ± 1.54	n=132, r-CBT + r-ACT + mindfulness (9 modules, flexible per session, platform: mobile application)	No	12 weeks
								n=134, usual care	NA	
Braun 2022 (96)	Germany	56.98 ± 8.65	70.4	NR	Chronic pain-associated disability	At least 6 months	4.4 ± 1.72	n=44, r-ACT (7 modules, 30-60 min per session, platform: website)	Yes	48 weeks
								n=45, education (received psychoeducation material per email)	NA	
Buhrman 2004 (103)	Sweden	44.6 ± 10.4	62.5	NR	Back pain (i.e. lumbar, thoracic and/or cervical area)	10.1 ± 9.2	4.1 ± 1.65	n=27, r-CBT (7 weekly sessions, length of sessions: NR, platform: website)	Yes	20 weeks
								n=29, usual care	NA	
Buhrman 2011 (38)	Sweden	43.2 ± 9.8	68.51	NR	Back pain (i.e. lumbar, thoracic and/or cervical area)	12.1 ± 8.5	5.6 ± 3.89	n=26, r-CBT (11 weekly sessions, length of sessions: NR, platform: website)	Yes	11 weeks
								n=28, usual care	NA	
Buhrman 2013 (a) (37)	Sweden	40.1 ± 8.94	72.2	NR	Back, neck, shoulders, and widespread pain in more than two areas of the body, e.g., fibromyalgia	6.2 ± 2.07	6.5 ± 1.74	n=36, r-CBT (8 weekly sessions, length of sessions: NR, platform: website)	Yes	32 weeks
								n=36, usual care (weekly online discussion forum)	NA	
Buhrman 2013 (b) (39)	Sweden	49.1 ± 10.34	59.2	NR	Chronic pain (multiple sites, including back, neck, head, shoulders, arms, hips, legs, feet, generalised pain)	15.3 ± 11.65	7.4 ± 1.4	n=38, r-ACT (7 weekly sessions, length of sessions: NR, platform: website)	Yes	7 weeks
								n=38, usual care (weekly online discussion forum)	NA	

Buhrman 2015 (40)	Sweden	50.69 ± 12.72	85	NR	Chronic pain (reported locations: back, neck, shoulders, generalised pain)	At least 3 months	6.4 ± 1.7	n=28, r-CBT (8 weekly sessions, length of sessions: NR, platform: website)	Yes	7 weeks
								n=24, usual care (weekly online discussion forum)	NA	
Buhrman 2023 (41)	Sweden	49.1 ± 10.34	59.2	NR	Chronic pain (Back, Neck, head, Shoulders, arms, Hips, legs, feet, Generalized pain)	15.3 ± 11.65	6.3 ± 1.97	n=42, r-ACT (8 weekly sections, length of modules NR, platform: website)	Yes	8 weeks
								n=42, usual care	NA	
Buhrman 2024 (104)	Sweden	26.5 ± 4.94	100	NR	Provoked Vestibulodynia	<1 year: 7%, 2-5 years: 36%, 6-10 years: 26%, >10 years: 19%	2.6 ± 2.37	N=49, r-ACT (8 modules, 10 weeks, length of sessions: NR, platform: website)	Yes	10 weeks
								N=49, usual care	NA	
Burke 2019 (105)	Ireland	51 ± 13	25	NR	Spinal cord injury	At least 3 months	5.2 ± 2.14	n=35, r-CBT + education + mindfulness (6 weekly CBT sessions, length of sessions: NR, platform: website; education sessions incorporated interactive slides with images, summarized text, a voice-over explanation and a short introductory video. Slides with text contained on average 50 words, presented in bullet point format with up to three relevant images. Hyperlinks to external websites with useful resources were included where applicable; guided audio relaxation practice and a progressive exercise programme which was adaptable to different levels of mobility and involved flexibility, strength, aerobic and Pilates exercise in line with established	Yes	18 weeks

								exercise guidelines post spinal cord injury.		
								n=34, usual care	NA	
Calner 2017 (94)	Sweden	42.9 ± 10.7	85	NR	Persistent musculoskeletal pain from the back, neck, and shoulders, and/or a generalized pain condition with a duration of at least three months	6.55 ± 8.11	6.5 ± 1.64	n=60, r-CBT + rehabilitation (8 modules, one module per week for the first eight weeks, total 16 weeks, platform: website; rehabilitation: minimum of two or three treatment sessions a week for at least six weeks, mean 30 min per session, platform: at the health-care center)	No	48 weeks
								n=49, rehabilitation (minimum of two or three treatment sessions a week for at least six weeks, mean 30 min per session, platform: at the health-care center)	NA	
Carmody 2013 (92)	USA	67.53 ± 9.59	3	100	Most common pain diagnoses included low back and cervical pain, with and without radiculopathy, sciatica-related leg pain, musculoskeletal problems, arthritis-related pain, degenerative disk disease, and peripheral neuropathy.	17.49 ± 16.46	8.4 ± 2.3	n=50, r-CBT (12 sessions over 20 weeks, the first 8 sessions were weekly, next 2 sessions were biweekly, final 2 sessions were one month apart, length of session NR, platform: telephone-delivered)	Yes	46 weeks
								n=51, education (12 sessions of pain education over 20 weeks, the first 8 sessions were weekly, next 2 sessions were biweekly, final 2 sessions were one-month apart length of session NR, platform: telephone-delivered)	NA	
Carpenter 2012 (42)	USA	42.5 ± 10.3	83	NR	Chronic low back pain	8.64 ± 7.84	5.5 ± 1.62	n=70, r-CBT + r-ACT + mindfulness (6 sessions, 2 sessions per week, 1-1.5 hour per session, platform: website; therapeutic content was drawn from cognitive therapy, behavioural activation, acceptance and commitment therapy, and mindfulness-based stress reduction)	No	3 weeks

								n=71, usual care	NA	
Catella 2023 (49)	USA	52.8 ± 10.3	98.5	NR	Fibromyalgia	NR	NR	n=39, r-ACT (8 chapters, 12 weeks, 15-20 min per session and 4-6 session per chapter, platform: smartphone)	No	48 weeks
								n=28, usual care (access to daily app interaction in the form of health education materials and patient-reported symptom and function tracking without delivering psychotherapy)	NA	
Cui 2023 (106)	USA	52.5 ± 15.64	67.9	NR	Chronic low back pain	At least 3 months	5.4 ± 2.53	n=70, r-CBT + r-ACT + education + exercise (8 weeks, lengths of CBT/ACT sessions: NR, platform: online; The exercise component consisted of three 20-minute exercise sessions per week; a total of 24 sessions, through the tablet display; The educational component consisting of articles focusing on anatomy and physiology, pain, exercise, and fear-avoidance behaviors, was delivered through a smartphone app)	No	8 weeks
								n=70, rehabilitation (16 sessions, two 30-minute sessions per week for 8 weeks, platform: in-person)	NA	
de Boer 2014 (107)	the Netherlands	52.1 ± 11.2	64	NR	Non-specific chronic pain (head/neck, back, arm/shoulder, leg/hip/knee, abdomen, throughout the body, other)	8.5 ± 8.2	6.1 ± 1.98	n=38, r-CBT (8 sessions [7 weekly continuous sessions and one booster 2 months after the last session, 120 min per session, platform: website)	Yes	15 weeks
								n=34, in-person CBT (8 group sessions [7 weekly continuous sessions and one booster 2 months after the last session, 120 min per session, platform: meeting room at the hospital)	NA	

Dear 2013 (108)	Australia	49 ± 13	85	NR	Mixed (e.g. back, hip/leg/foot, shoulder/arm/hand, neck/head/face)	7.36 ± 8.1	5.8 ± 1.39	n=31, r-CBT (5 lessons, 8 weeks, 7-10 days per lesson, platform: website)	Yes	20 weeks
								n=31, usual care	NA	
Dear 2015 (50)	Australia	50 ± 13	80	NR	Mixed (e.g. head/face/mouth, neck/shoulders/upper back, arms/forearms/hands, lower back/pelvis/sacrum, legs/knees/feet)	9.35 ± 8.22	5.8 ± 1.52	n=143, r-CBT regular contact (5 lessons, 8 weeks, 7-10 days per lesson, platform: website)	Yes	8 weeks
								n=141, r-CBT optional contact (5 lessons, 8 weeks, 7-10 days per lesson, platform: website)	Yes	
								n=131, r-CBT no contact (5 lessons, 8 weeks, 7-10 days per lesson, platform: website)	No	
								n=75, usual care	NA	
Dear 2022 (51)	Australia	48.58 ± 13.59	85	NR	Mixed (e.g. head/face/jaw, throat/neck/shoulders, upper arms/forearms/wrist/hands, chest/abdomen/pelvis, upper back/lower back, buttocks/hips/anus, legs/feet/toes)	9.44 ± 7.02	5.5 ± 1.85	n=334, r-CBT (5 lessons, 8 weeks, 7-10 days per lesson, platform: website)	Yes	8 weeks
								n=325, usual care	NA	
Dowd 2015 (109)	Ireland	44.53 ± 12.25	90.3	NR	A broad range of chronic pain conditions (Fibromyalgia, nerve damage/pain, disk problems, arthritis, traumatic injury, headaches, neuropathy, spinal stenosis, other)	10.8 ± 9	5.7 ± 1.89	n=62, r-CBT+ mindfulness/relaxation (12 sessions, twice per week, total 6 weeks, 20 minutes per session, platform: online)	No	30 weeks
								n=62, education (twice weekly emails with psychoeducational material related to chronic pain, platform: emails)	NA	

Ferwerda 2017 (110)	Netherlands	56.35 ± 10	64	NR	Rheumatoid arthritis	NR	5.2 ± 2.4	n=62, r-CBT (9-65 weeks, weekly or biweekly, length of sessions: varied, platform: website)	Yes	74 weeks
								n=71, usual care	NA	
Fraenkel 2020 (111)	USA	58.35 ± 10.91	13.46	100	Knee osteoarthritis pain	At least 3 months	3.6 ± 1.32	n=174, r-CBT (10 weekly sessions, 10 weeks, 30-45 min per session, platform: telephone-delivered)	Yes	10 weeks
								n=177, usual care	NA	
Friesen 2017 (112)	Canada	48 ± 11	95	NR	Fibromyalgia	16 ± 10	5.7 ± 1.28	n=30, r-CBT (5 lessons, 8 weeks, 7-10 days per lesson, platform: website)	Yes	8 weeks
								n=30, usual care	NA	
Gasslander 2022 (95)	Sweden	45.9 ± 11.1	73.3	NR	Various chronic pain conditions: primary pain, postsurgical or traumatic pain, neuropathic pain, headache or orofacial pain, visceral pain, musculoskeletal pain	14.9 ± 10.4	6.6 ± 1.59	n=114, r-CBT (6 -13 weekly sessions, platform: website)	Yes	60 weeks
								n=112, usual care	NA	
Gendreau 2024 (99)	USA	49.5 ± 13.7	95.2	NR	Fibromyalgia	9 ± 10.7	NR	N=140, r-ACT (8 chapters consisted of 42 sessions, maximum allowed one session per day, 12 weeks, 15-20 min per session, platform: smartphone application)	No	12 weeks
								N=135, usual care	NA	
Guarino 2018 (52)	USA	51.3 ± 10.9	64	NR	Chronic pain	At least 3 months	7.8 ± 1.63	n=55, r-CBT (27 self-paced modules, 20-30 min per module, two modules per week for 12 weeks, platform: website)	No	24 weeks
								n=55, usual care	NA	

Heapy 2017 (93)	USA	57.9 ± 11.6	22.4	100	Chronic back pain	13.67 ± 14.81	5.6 ± 1.6	n=62, r-CBT (10 modules, maximum 10 weeks, platform: interactive voice response (IVR))	Yes	36 weeks
								n=63, in-person CBT (10 weekly sessions, 30-40 min per session, platform: in person sessions)	NA	
Hedman-Lagerlöf 2018 (53)	Sweden	50.3 ± 10.9	98	NR	Fibromyalgia	10.1 ± 7.5	6.1 ± 2.12	n=70, r-CBT (8 modules, 10 weeks, length of sessions: NR, platform: website)	Yes	58 weeks
								n=70, usual care	NA	
Herbert 2017 (113)	USA	52 ± 13.3	17.8	100	Chronic, non-terminal pain conditions	At least 6 months	6.1 ± 1.98	n=63, r-ACT (8 weekly sessions, 8 weeks, 60 min per session, platform: video teleconferencing)	Yes	32 weeks
								n=65, in-person ACT (8 weekly sessions, 8 weeks, 60 min per session, platform: in-person)	NA	
Hess-Engström 2022 (54)	Sweden	24.5 ± 4.4	100	NR	Vulvodynia	4.9 ± 4.2	6.9 ± 2.12	n=52, r-ACT (6 weekly sessions, length of sessions: NR, platform: website)	Yes	42 weeks
								n=47, usual care	NA	
Lam 2020 (55)	Sweden	29 ± 10.37	79	NR	Chronic temporomandibular disorder pain	At least 3 months	4.5 ± 1.34	n=20, r-CBT (7 weekly modules, 7 weeks, 40 min per session, platform: website)	Yes	24 weeks
								n=23, usual care	NA	
Lin 2017 (114)	Germany	51.7 ± 13.1	84.1	NR	Chronic pain varied (back, head, neck, shoulders, others)	9.53 ± 10.13	5.27 ± 1.51	n=100, r-ACT guided (7 weekly modules, 60 min per module, platform: website)	Yes	24 weeks
								n=101, r-ACT unguided (7 weekly modules, 60 min per module, platform: website)	No	
								n=101, usual care	NA	

Maathz 2023 (43)	Sweden	26.86 ± 5.27	100	NR	Vestibulodynia	At least 6 months	6 ± 2.72	n=22, r-ACT (6 weekly modules, length of modules NR, platform: website)	Yes	6-7 weeks
								N=22, usual care	NA	
Maroti 2022 (115)	Sweden	42.9 ± 10.4	82.4	NR	Somatic symptom disorder	At least 6 months	4.3 ± 1.82	n=37, r-CBT (10 weeks, length of modules NR, platform: website)	Yes	26 weeks
								n=37, usual care	NA	
McKernan 2024 (56)	USA	44.4 ± 16.3	91	NR	Interstitial cystitis/bladder pain syndrome	14 years	5 ± 2.1	N=52, r-CBT (8 weekly sessions, 50 min per session, 8 weeks, platform: videoconference)	Yes	20 weeks
								N=26, usual care	NA	
Morcillo-Muñoz 2022 (116)	Spain	50.8 ± 10.7	80	NR	Chronic musculoskeletal pain	At least 3 months	NR	n=105, r-ACT + education + mindfulness (6 weeks, length of sessions: NR, platform: smartphone application, a multimodal approach including psychoeducation, mindfulness, and r-ACT)	No	18 weeks
								n=104, education + mindfulness (access to audiovisual materials for pain management, such as education and relaxation, platform: smartphone application)	NA	
Naude 2024 (117)	Australia, New Zealand	34 ± 10.87	81.7	NR	Inflammatory bowel disease including Crohn's disease and ulcerative colitis	10.6 ± 9.08	3.9 ± 2.4	N=61, r-ACT (8 weekly sessions, 60 min per session, 8 weeks, platform: 4 sessions were psychologist-led via Zoom and 4 were self-led via website)	Yes	20 weeks
								N=59, education (CBT-informed psychoeducation program, same details as above)	NA	
Nordin 2016 (118)	Sweden	43 ± 11	84.84	NR	Persistent musculoskeletal pain in	6.54 ± 8.11	6.5 ± 1.64	n=60, r-CBT + rehabilitation (8 weekly modules, 8 weeks, 10-30 minutes per session, platform: website)	No	48 weeks

					the back, neck, shoulder, and/or generalized pain			n=49, rehabilitation (multimodal pain rehabilitation 2-3 times per week for 6-8 weeks, platform: in-person)	NA	
Park 2024 (57)	South Korea	34.8 ± 11.92	57.5	NR	Temporomandibular disorder	NR	1.7 ± 1.47	N=20, r-CBT (daily app-guided sessions, including 10 educational videos and 6 daily self-exercise prompts, 3–4 weeks, platform: smartphone application)	No	4 weeks
								N=20, usual care	NA	
Peters 2017 (44)	the Netherlands and Belgium	48.6 ± 12	85	NR	Chronic musculoskeletal pain: localised in back, neck, or shoulders, or generalised (i.e. fibromyalgia)	12.8 ± 10.1	6.27 ± 1.87	n=116, r-CBT (8 modules, duration ranged from 7 weeks to 16 weeks, platform: website)	Yes	8 weeks
								n=117, r-CBT (8 modules, duration ranged from 7 weeks to 16 weeks, platform: website)	Yes	
								n=51, usual care	NA	
Reilly 2024 (119)	USA	53.7 ± 15.2	17	100	Chronic pain (noncancer-related)	NR	7.2 ± 1.78	N=20, r-ACT (7 weekly sessions, 15-20 min per session, 7 weeks, platform: website)	No	7 weeks
								N=22, usual care		
Rickardsson 2021 (45)	Sweden	49.5 ± 12.1	75	NR	Mix of chronic pain conditions, including nociceptive (i.e. spinal disc hernia, rheumatic diseases, whiplash), neuropathic (nerve damage), nociplastic (fibromyalgia, complex regional pain syndrome), headaches (migraine, Horton's), other/unclear	18.1 ± 13.1	5.5 ± 1.52	n=57, r-ACT (8 levels, one level per week, duration ranged from 8 weeks to 10 weeks, platform: website)	Yes	8 weeks
								n=56, usual care	NA	
Rini 2015 (46)	USA		81	NR	Knee or hip osteoarthritis	NR	5 ± 1.77	n=58, r-CBT (8 weekly modules, 35-45 min per module, platform: website)	No	9-11 weeks

		67.62 ± 9.45						n=55, usual care	NA	
Romano 2024 (120)	Australia, New Zealand	33 ± 9.37	89.1	NR	Inflammatory bowel disease including Crohn's disease and ulcerative colitis	NR	3.9 ± 2.28	N=31, r-ACT (8 weekly sessions, 60 min per session, 8 weeks, platform: 4 sessions were psychologist-led via Zoom and 4 were self-led via website)	Yes	8 weeks
								N=31, education (CBT-informed psychoeducation program, same details as above)	NA	
Ruehlman 2012 (121)	USA	44.93 ± NR	35.7	NR	Mixed (migraine headaches, back injury/disease, tension headaches, osteoarthritis, facial/jaw pain, premenstrual syndrome, pelvic injury/disease, rheumatoid arthritis, cancer)	89.5% had pain for at least 2 years	7.6 ± 1.03	n=165, r-CBT (4 modules, 6 weeks, platform: online)	No	14 weeks
								n=165, usual care	NA	
Rutledge 2018 (a) (58)	USA	53.30 ± 13.61	38.45	NR	Chronic back pain	At least 6 months	5.3 ± 1.71	n=33, r-CBT (12 sessions, 8 weeks, 2-hour initial session, 30 min twice weekly sessions during weeks 1-4 and once weekly during weeks 5-8, total contact time was 8 hours, platform: telephone-delivered, initial session face-to-face)	Yes	8 weeks
								n=33, education (same as above, content was education and active listening)	NA	
Rutledge 2018 (b) (122)	USA	63.41 ± 11.96	9.5	100	Chronic back pain	At least 6 months	5 ± 1.98	n=33, r-CBT (12 sessions, 8 weeks, 2-hour initial session, 30 min twice weekly sessions during weeks 1-4 and once weekly during weeks 5-8, total contact time was 8 hours, platform: telephone-delivered, initial session face-to-face)	Yes	8 weeks

								n=34, education (same as above, content was education and active listening)	NA	
Sanbria-Mazo 2023 (123)	Spain	54.53 ± 9.48	67.5	NR	Chronic low back pain	At least 3 months	6.9 ± 1.71	n=78, r-ACT (8 sessions, 90 min per session, platform: videoconference of 7-13 participants) * One active arm was not eligible for this study	Yes	48 weeks
								n=78, usual care	NA	
Schlicker 2020 (124)	Germany	50.78 ± 7.85	72	NR	Chronic back pain	NR	4.4 ± 1.94	n=40, r-CBT (7 weekly modules, 45-60 min per module, platform: smartphone application)	Yes	33 weeks
								n=36, usual care	NA	
Scott 2018 (125)	UK	25.52 ± 13.98	63.49	NR	Mixed (e.g. head/face/mouth, neck, upper shoulder/limbs, chest, lower back/spine, lower limbs, pelvic region, anal/genital, widespread pain)	Mean: 6.75 years (range: 0.75 to 47.50 years)	7.4 ± 1.26	n=31, r-ACT (8 sessions, twice weekly for the first 3 weeks and once weekly for the final 2 weeks, duration ranged 10-12 weeks, platform: website)	Yes	36 weeks
								n=32, usual care	NA	
Serrat 2021 (126)	Spain	54.35 ± 8.68	93.37	NR	Fibromyalgia	15.75 ± 9.16	NR	n=75, r-CBT + education + mindfulness (12 weekly sessions, 60 min per session, platform: YouTube channel, multicomponent strategy based on pain neuroscience education, CBT and mindfulness training)	No	12 weeks
								n=76, usual care	NA	
Simister 2018 (127)	Canada	39.7 ± 9.36	95	NR	Fibromyalgia	10.16 ± 7.83	5.8 ± 1.86	n=33, r-ACT (7 weekly modules, 8 weeks, platform: online)	Yes	20 weeks
								n=34, usual care	NA	
Smith 2019 (59)	Australia	45 ± 13.86	87.5	NR	Chronic pain	33% less than 5 years and	5.2 ± 1.66	n=45, r-CBT + education + mindfulness + exercise (8 biweekly lessons, 16 weeks, platform: online)	Yes	28 weeks

						47% at least 5 years		n=46, usual care	NA	
Taguchi 2021 (128)	Japan	47.1 ± 13.58	65.5	NR	Chronic pain (lower back, back, neck, arm, leg)	9.4 ± 9.9	5.4 ± 1.52	n=15, r-CBT (16 weekly sessions, 50 min per session, platform: videoconference)	Yes	16 weeks
								n=15, usual care	NA	
Thomson 2024 (129)	Canada, USA	46.7 ± 13.1	81.8	NR	Various chronic pain conditions, including musculoskeletal pain, visceral pain, migraine, and fibromyalgia	13.6 ± 11.2	5.4 ± 1.5	N=98, r-CBT (self-guided application, daily use was encouraged but at least 4 times a week was necessary, range of activities length: 1-30 min, over 6 weeks, platform: smartphone application)	No	6 weeks
								N=100, usual care	NA	
Thorsell 2011 (130)	Sweden	46 ± 12.3	64.4	NR	Chronic pain	NR	8.1 ± 1.7	n=61, r-ACT (9 sessions, 7 weeks, 30 min weekly sessions, 90 min initial and concluding sessions, platform: an initial face-to-face session, 7 telephone sessions, and 1 concluding face-to-face session)	Yes	55 weeks
								n=54, mindfulness/relaxation (9 sessions, 7 weeks, 30 min weekly sessions, 90 min initial and concluding sessions, platform: an initial face-to-face session, 7 telephone sessions, and 1 concluding face-to-face session)	NA	
Trompetter 2015 (131)	The Netherlands	52.79 ± 12.35	76	NR	A broad range of chronic pain conditions	At least 6 months	6.2 ± 1.59	n=82, r-ACT (9 modules, 9-12 weeks, at least 3 hours per week, platform: online)	Yes	24 weeks
								n=79, education (9 modules stating with psychoeducation about emotions and emotion regulation related to the pain experience, followed by a specific writing assignment, 9-12 weeks, at least 3 hours per week, platform: online)	NA	
								n=77, usual care	NA	

Trudeau 2015 (132)	USA	49.9 ± 11.6	68.4	NR	Arthritis pain	NR	5.4 ± 1.54	n=124, r-CBT (minimum 8 sessions over 4 weeks [2 sessions per week + 5 follow-up sessions], 20 min per session, platform: website)	No	24 weeks
								n=121, usual care	NA	
Vallejo 2015 (133)	Spain	51.55 ± 9.87	100	NR	Fibromyalgia	13.7 ± 13.05	NR	n=20, r-CBT (10 weekly sessions, duration: NR, platform: web application)	Yes	48 weeks
								n=20, in-person CBT (10 weekly group sessions, each session 120 min)	Yes	
								n=20, usual care	NA	
Veillette 2019 (134)	Canada	51.06 ± 12.67	81.5	NR	Chronic Pain (Fibromyalgia was the most frequent diagnosis encountered (38.5%), followed by back pain (20%) and neuropathic pain (16.9%), and almost half (46.9%) had various types of pain.)	At least 3 months	NR	n=70, r-ACT (8 weekly modules, length of sessions: NR, platform: website)	Yes	8 weeks
								n=70, usual care	NA	
Williams 2010 (47)	USA	50.46 ± 11.45	95	NR	Fibromyalgia	9.40 ± 6.46	5 ± 1.4	n=59, r-CBT (13 modules, length of modules NR, platform: website)	No	24 weeks
								n=59, usual care	NA	
Wilson 2015 (48)	USA	49.3 ± 11.6	78	NR	Chronic pain with opioid prescription (mixed; most common: back or spine conditions (45%), fibromyalgia (29%), arthritis/osteoarthritis (26%), migraine headache (22%), and chronic postsurgical pain (17%))	NR	5.3 ± 1.62	n=57, r-CBT (8 weeks, length of modules NR, platform: website)	No	8 weeks
								n=57, usual care	NA	

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; IVR: interactive voice response; min: minutes; NA: not applicable; NR: not reported; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SD: standard deviation; UK: United Kingdom; USA: United States of America.

Table 3.2. Risk of bias assessment of included studies.

Study	Randomization Process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of the reported result	Overall
Ang 2010 (100)	Some concerns	Some concerns	Low	Some concerns	Some concerns	Some concerns
Baumeister 2021 (98)	Low	Low	Low	Low	Low	Low
Bendelin 2021 (101)	Low	High	High	Some concerns	Some concerns	High
Bennell 2018 (97)	Low	Low	Low	Low	Low	Low
Bostrom 2023 (102)	Low	Some concerns	Low	Some concerns	High	High
Braun 2022 (96)	Low	Low	Some concerns	Some concerns	Low	Some concerns
Buhrman 2004 (103)	Low	Some concerns	Low	Some concerns	Some concerns	Some concerns
Buhrman 2011 (38)	Some concerns	Low	Low	Some concerns	Some concerns	Some concerns
Buhrman 2013 (a) (37)	Low	Low	Low	Some concerns	Some concerns	Some concerns
Buhrman 2013 (b) (39)	Some concerns	Low	Some concerns	Some concerns	Some concerns	Some concerns
Buhrman 2015 (40)	Low	Low	Low	Some concerns	High	High
Buhrman 2023 (41)	Low	Low	Some concerns	Some concerns	Low	Some concerns

Buhrman 2024 (104)	Low	Low	High	Some concerns	High	High
Burke 2019 (105)	Low	Low	Low	Some concerns	Some concerns	Some concerns
Calner 2017 (94)	Low	Some concerns	Low	Some concerns	High	High
Carmody 2013 (92)	Low	Low	Some concerns	Low	Low	Some concerns
Carpenter 2012 (42)	Low	Low	High	Some concerns	Some concerns	High
Catella 2023 (49)	Low	Low	Low	Some concerns	Low	Some concerns
Cui 2023 (106)	Low	Low	Some concerns	Some concerns	Low	Some concerns
de Boer 2014 (107)	Low	Low	High	Some concerns	Some concerns	High
Dear 2013 (108)	Some concerns	Low	Low	Some concerns	Some concerns	Some concerns
Dear 2015 (50)	Low	Low	Low	Some concerns	Low	Some concerns
Dear 2022 (51)	Low	Low	Low	Some concerns	Low	Some concerns
Dowd 2015 (109)	Low	Low	Some concerns	Some concerns	Some concerns	Some concerns
Ferwerda 2017 (110)	Low	Low	Low	Some concerns	Low	Some concerns
Fraenkel 2020 (111)	Some concerns	Low	Some concerns	Some concerns	Low	Some concerns
Friesen 2017 (112)	Low	Low	Low	Some concerns	Some concerns	Some concerns

Gasslander 2022 (95)	Low	Low	High	Some concerns	High	High
Gendreau 2024 (99)	Low	Low	Low	Low	Low	Low
Guarino 2018 (52)	Low	Low	Low	Some concerns	Some concerns	Some concerns
Heapy 2017 (93)	Low	Low	Some concerns	Some concerns	Low	Some concerns
Hedman-Lagerlof 2018 (53)	Low	Low	Low	Some concerns	High	High
Herbert 2017 (113)	Low	Some concerns	High	Some concerns	Low	High
Hess Engstrom 2022 (54)	Low	Low	Some concerns	Some concerns	High	High
Lam 2020 (55)	Low	High	High	Some concerns	Some concerns	High
Lin 2017 (114)	Low	Low	Low	Some concerns	Low	Some concerns
Maathz 2023 (43)	Low	Low	Low	Some concerns	Low	Some concerns
Maroti 2022 (115)	Low	Low	Low	Some concerns	High	High
McKernan 2024 (56)	Low	Low	Low	Some concerns	High	High
Morcillo-Munoz 2022 (116)	Low	High	High	Some concerns	Low	High
Naude 2024 (117)	Low	Low	High	Low	Some concerns	High

Nordin 2016 (118)	Low	Low	Low	Some concerns	High	High
Park 2024 (57)	Low	Low	Low	Some concerns	Low	Some concerns
Peters 2017 (44)	Some concerns	Low	High	Some concerns	Low	High
Reilly 2024 (119)	Low	Low	High	Some concerns	Low	High
Rickardsson 2021 (45)	Low	Low	Low	Some concerns	High	High
Rini 2015 (46)	Low	Low	Low	Some concerns	High	High
Romano 2024 (120)	Low	Low	Low	Low	Some concerns	Some concerns
Ruehlman 2012 (121)	Some concerns	Low	Low	Some concerns	Some concerns	Some concerns
Rutledge 2018 (a) (58)	Low	Low	Low	Some concerns	Low	Some concerns
Rutledge 2018 (b) (122)	Low	Low	Some concerns	Some concerns	Low	Some concerns
Sanabria-Mazo 2023 (123)	Low	Low	High	Some concerns	Low	High
Schlicker 2020 (124)	Low	Low	Low	Some concerns	Low	Some concerns
Scott 2018 (125)	Low	Low	Low	Some concerns	Some concerns	Some concerns
Serrat 2021 (126)	Low	Low	High	Some concerns	Some concerns	High
Simister 2018 (127)	Low	Low	Low	Some concerns	Low	Some concerns
Smith 2019 (59)	Low	Low	Low	Some concerns	Low	Some concerns

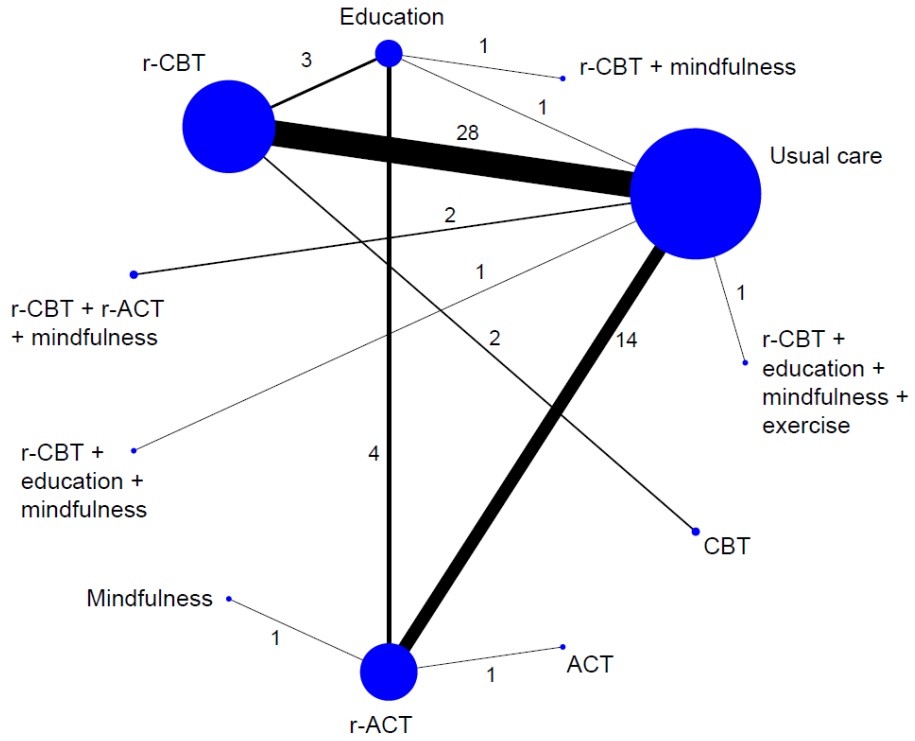
Taguchi 2021 (128)	Low	Low	Low	Some concerns	Low	Some concerns
Thomson 2024 (129)	Low	Low	Low	Some concerns	High	High
Thorsell 2011 (130)	Low	Low	High	Some concerns	Some concerns	High
Trompetter 2015 (131)	Low	Low	Low	Some concerns	High	High
Trudeau 2015 (132)	Low	Low	High	Some concerns	Low	High
Vallejo 2015 (133)	High	Low	Low	Some concerns	Some concerns	High
Veillette 2019 (134)	Some concerns	Low	Some concerns	Some concerns	Low	Some concerns
Williams 2010 (47)	Low	Low	Low	Some concerns	Some concerns	Some concerns
Wilson 2015 (48)	Some concerns	Some concerns	Low	Some concerns	Some concerns	Some concerns

Table 3.3. Summary of component network meta-analysis (CNMA) results.

Outcome of interest	Timepoint	Number of studies	Incremental effect	Components	
				r-ACT	r-CBT
Pain	Post-treatment	62	iMD [95% CI]	**-0.52 [-0.73; -0.30]**	**-0.32 [-0.47; -0.17]**
	Up to 6 months	27	iMD [95% CI]	**-0.49 [-0.81; -0.18]**	-0.13 [-0.32; 0.05]
	6-12 months	12	iMD [95% CI]	-0.49 [-1.14; 0.16]	0.25 [-0.27; 0.77]
Physical function	Post-treatment	42	iMD [95% CI]	**5.66 [2.83; 8.49]**	**3.23 [1.42; 5.03]**
	Up to 6 months	18	iMD [95% CI]	**5.37 [1.28; 9.45]**	0.01 [-2.53; 2.55]
	6-12 months	7	iMD [95% CI]	5.07 [-5.48; 15.62]	-2.43 [-7.75; 2.89]
Depression	Post-treatment	52	iMD [95% CI]	**-1.60 [-2.27; -0.93]**	**-1.64 [-2.14; -1.13]**
	Up to 6 months	23	iMD [95% CI]	**-1.46 [-2.19 ; -0.72]**	**-0.83 [-1.27 ; -0.39]**
	6-12 months	8	iMD [95% CI]	-1.71 [-3.84; 0.43]	-0.57 [-1.26; 0.12]
Anxiety	Post-treatment	40	iMD [95% CI]	-0.66 [-1.39; 0.06]	**-1.27 [-1.77; -0.76]**
	Up to 6 months	16	iMD [95% CI]	-0.63 [-1.34; 0.08]	**-0.47 [-0.87; -0.07]**
	6-12 months	6	iMD [95% CI]	**-1.98 [-3.87; -0.09]**	-0.26 [-0.81; 0.30]
Mental health	Post-treatment	11	iMD [95% CI]	1.28 [-0.79; 3.34]	0.45 [-1.32; 2.22]
Quality of life	Post-treatment	18	iMD [95% CI]	**0.07 [0.03; 0.11]**	**0.05 [0.02; 0.07]**
Dropout rate	NA	66	iRR [95% CI]	**1.38 [1.12; 1.70]**	**1.37 [1.14; 1.66]**

CI: confidence interval; iMD: incremental mean difference; NA: not applicable; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; iRR: incremental risk ratio

Figure 3.2. Network map of pain intensity at post-treatment.



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.4. Results of network meta-analysis with GRADE certainty of evidence for pain intensity at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	**-0.97 (-1.79,-0.15)**	-0.18 (-0.91,0.54)	**-0.41 (-0.79,-0.03)**	**-0.59 (-0.81,-0.37)**	**-0.36 (-0.50,-0.23)**	-0.06 (-0.50,0.39)	**-1.60 (-2.70,-0.50)**	-0.64 (-1.46,0.18)	0.35 (-0.62,1.32)	-0.11 (-1.24,1.02)
	ACT	0.79 (-0.31,1.89)	0.56 (-0.32,1.44)	0.38 (-0.41,1.17)	0.61 (-0.23,1.44)	0.91 (-0.02,1.85)	-0.63 (-2.00,0.74)	0.33 (-0.83,1.49)	1.32 (0.07,2.57)	0.86 (-0.50,2.22)
		CBT	-0.23 (-1.04,0.59)	-0.41 (-1.17,0.35)	-0.18 (-0.90,0.53)	0.12 (-0.73,0.98)	**-1.42 (-2.73,-0.10)**	-0.46 (-1.55,0.64)	0.53 (-0.67,1.74)	0.07 (-1.27,1.42)
			Education	-0.18 (-0.56,0.19)	0.05 (-0.34,0.43)	0.35 (-0.24,0.94)	**-1.19 (-2.35,-0.03)**	-0.23 (-1.13,0.67)	0.76 (-0.13,1.65)	0.30 (-0.87,1.47)
				r-ACT	0.23 (-0.03,0.48)	0.53 (0.03,1.03)	-1.01 (-2.13,0.11)	-0.05 (-0.90,0.80)	0.94 (-0.02,1.90)	0.48 (-0.63,1.59)
					r-CBT	0.31 (-0.16,0.77)	**-1.24 (-2.34,-0.13)**	-0.28 (-1.11,0.55)	0.71 (-0.25,1.68)	0.25 (-0.88,1.39)
						r-CBT + r-ACT + mindfulness	**-1.54 (-2.73,-0.36)**	-0.58 (-1.51,0.35)	0.41 (-0.66,1.47)	-0.05 (-1.27,1.16)
							r-CBT + education + mindfulness	0.96 (-0.41,2.33)	1.95 (0.49,3.41)	1.49 (-0.08,3.06)
								r-CBT + education + mindfulness + exercise	0.99 (-0.28,2.26)	0.53 (-0.86,1.92)
									r-CBT + mindfulness	-0.46 (-1.93,1.01)
										Mindfulness

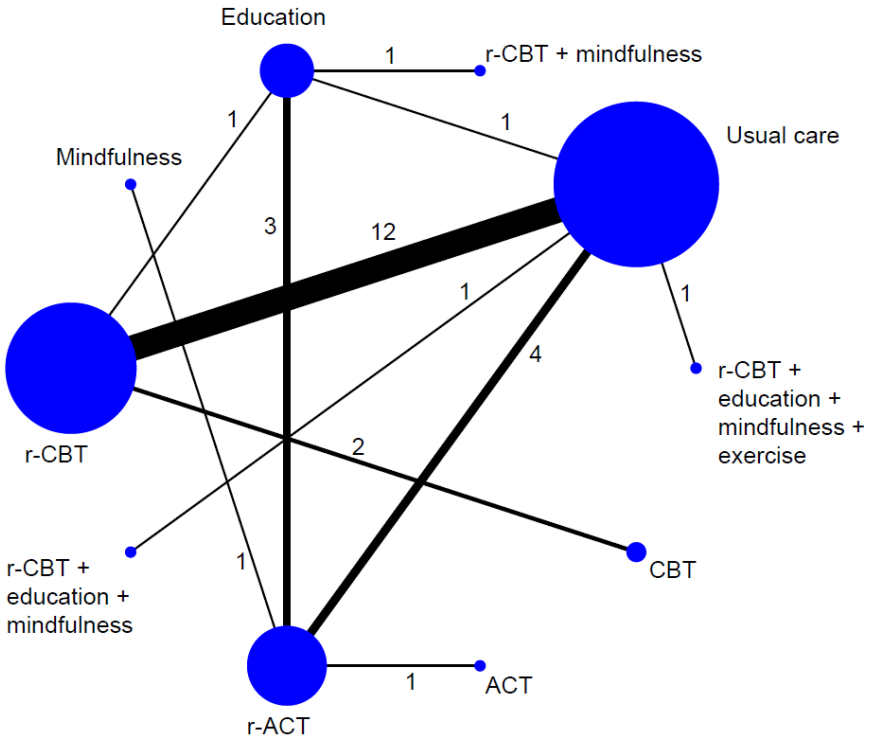
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.5. Results of the estimated direct and indirect treatment effects and their difference for pain intensity at post-treatment.

Comparison	Direct Estimate (SE)	Indirect Estimate (SE)	Difference (SE)	P-value
Education vs usual care	-0.392 (0.331)	0.663 (0.207)	-1.055 (0.389)	**0.007**
Education vs r-ACT	-0.190 (0.242)	-0.158 (0.322)	-0.033 (0.401)	0.935
Education vs r-CBT	0.312 (0.301)	-0.139 (0.247)	0.451 (0.389)	0.246
r-ACT vs usual care	0.596 (0.121)	0.543 (0.442)	0.053 (0.458)	0.908
r-CBT vs usual care	0.376 (0.069)	-0.076 (0.386)	0.451 (0.389)	0.246

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.05.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.3. Network map of pain intensity at first follow-up (up to 6 months post-treatment).



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.6. Results of network meta-analysis with GRADE certainty of evidence for pain intensity at first follow-up (up to 6 months post-treatment).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-0.58 (-1.35,0.18)	0.28 (-0.37,0.93)	0.12 (-0.30,0.55)	**-0.52 (-0.81,-0.24)**	**-0.19 (-0.32,-0.06)**	-0.49 (-1.53,0.55)	**-0.74 (-1.46,-0.02)**	0.42 (-0.54,1.38)	-0.62 (-1.55,0.31)
	ACT	0.86 (-0.14,1.86)	0.71 (-0.11,1.52)	0.06 (-0.65,0.77)	0.39 (-0.39,1.17)	0.09 (-1.20,1.39)	-0.16 (-1.21,0.89)	1.01 (-0.18,2.19)	-0.04 (-1.18,1.10)
		CBT	-0.15 (-0.93,0.62)	**-0.80 (-1.51,-0.09)**	-0.47 (-1.11,0.17)	-0.77 (-1.99,0.46)	**-1.02 (-1.98,-0.05)**	0.15 (-1.01,1.30)	-0.90 (-2.03,0.23)
			Education	**-0.65 (-1.04,-0.26)**	-0.32 (-0.75,0.12)	-0.61 (-1.74,0.51)	**-0.86 (-1.70,-0.03)**	0.30 (-0.56,1.16)	-0.75 (-1.71,0.22)
				r-ACT	0.33 (0.02,0.64)	0.03 (-1.04,1.11)	-0.22 (-0.99,0.55)	0.95 (0.00,1.89)	-0.10 (-0.99,0.79)
					r-CBT	-0.30 (-1.35,0.75)	-0.55 (-1.28,0.18)	0.62 (-0.35,1.58)	-0.43 (-1.37,0.51)
						r-CBT + education + mindfulness	-0.25 (-1.51,1.01)	0.91 (-0.50,2.33)	-0.13 (-1.53,1.26)
							r-CBT + education + mindfulness + exercise	1.16 (-0.03,2.36)	0.12 (-1.06,1.29)
								r-CBT + mindfulness	-1.05 (-2.34,0.25)
									Mindfulness

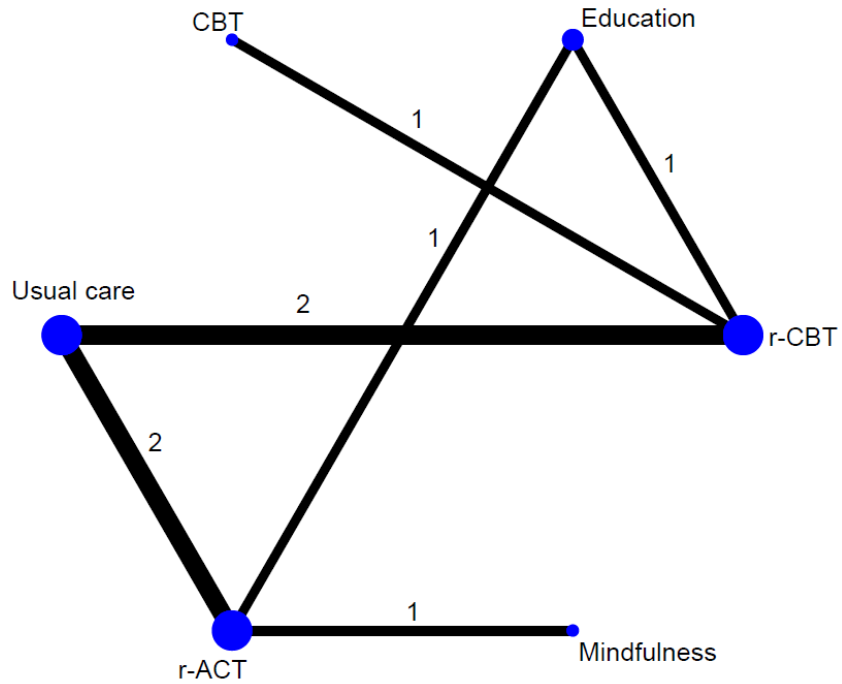
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.7. Results of the estimated direct and indirect treatment effects and their difference for pain intensity at first follow-up (up to 6 months post-treatment).

Comparison	Direct (SE)	Indirect (SE)	Difference (SE)	P-value
Education vs usual care	-0.28 (0.32)	-0.00 (0.29)	-0.27 (0.43)	0.524
Education vs r-ACT	-0.63 (0.22)	-0.73 (0.48)	0.10 (0.52)	0.847
Education vs r-CBT	-0.60 (0.60)	-0.27 (0.24)	-0.33 (0.65)	0.609
r-ACT vs usual care	0.58 (0.15)	-0.42 (0.59)	1.01 (0.61)	0.099
r-CBT vs usual care	0.19 (0.07)	0.52 (0.64)	-0.33 (0.65)	0.609

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.26.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.4. Network map of pain intensity at second follow-up (more than 6 months).



CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.8. Results of network meta-analysis with GRADE certainty of evidence for pain intensity at second follow-up (more than 6 months).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence	
Usual care	0.38 (-1.22,1.98)	-0.13 (-1.37,1.10)	-0.76 (-1.66,0.14)	0.31 (-0.65,1.26)	0.23 (-1.61,2.06)
	CBT	-0.51 (-2.30,1.27)	-1.14 (-2.87,0.60)	-0.07 (-1.35,1.21)	-0.15 (-2.51,2.21)
		Education	-0.63 (-1.74,0.48)	0.44 (-0.80,1.68)	0.36 (-1.58,2.31)
			r-ACT	1.07 (-0.10,2.24)	0.99 (-0.61,2.59)
				r-CBT	-0.08 (-2.06,1.90)
					Mindfulness

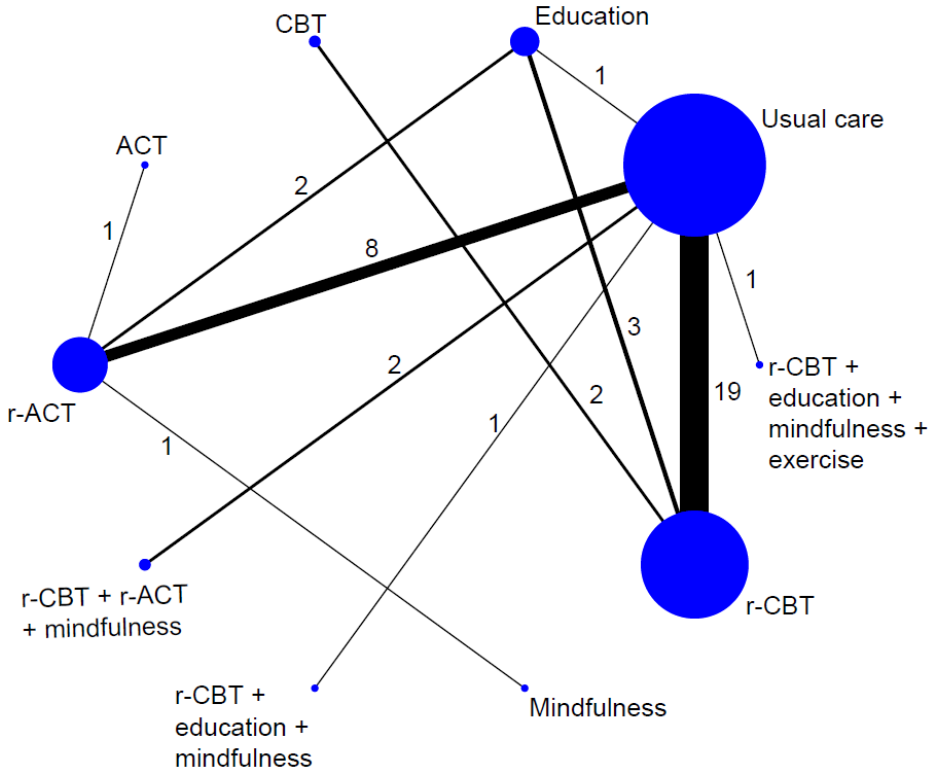
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.9. Results of the estimated direct and indirect treatment effects and their difference for pain intensity at second follow-up (more than 6 months).

Comparison	Direct (SE)	Indirect (SE)	Difference (SE)	P-value
Education vs r-ACT	-0.35 (0.71)	-1.41 (1.16)	1.06 (1.36)	0.436
Education vs r-CBT	0.00 (0.86)	1.06 (1.05)	-1.06 (1.36)	0.436
r-ACT vs usual care	0.93 (0.54)	-0.13 (1.26)	1.06 (1.36)	0.436
r-CBT vs usual care	-0.48 (0.57)	0.58 (1.24)	-1.06 (1.36)	0.436

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.4356.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.5. Network map of physical function at post-treatment.



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.10. Results of network meta-analysis with GRADE certainty of evidence for physical function at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	4.20 (-3.37,11.77)	0.17 (-8.02,8.36)	2.85 (-1.51,7.22)	**5.76 (2.67,8.86)**	**3.10 (1.22,4.97)**	4.38 (-1.58,10.33)	8.79 (-0.09,17.67)	**11.89 (3.10,20.67)**	-4.54 (-16.86,7.78)
ACT	-4.03 (-15.15,7.09)	-1.35 (-9.72,7.03)	1.56 (-5.35,8.47)	-1.10 (-8.85,6.64)	0.17 (-9.44,9.79)	4.59 (-7.08,16.26)	7.68 (-3.91,19.28)	-8.74 (-22.52,5.04)
CBT	2.68 (-6.38,11.75)	5.59 (-3.13,14.31)	2.92 (-5.05,10.90)	4.20 (-5.92,14.33)	8.62 (-3.47,20.70)	11.71 (-0.30,23.73)	-4.71 (-19.49,10.06)
Education	2.91 (-1.83,7.64)	0.24 (-4.07,4.55)	1.52 (-5.86,8.90)	5.94 (-3.96,15.83)	9.03 (-0.78,18.84)	-7.39 (-20.23,5.44)
r-ACT	-2.66 (-6.17,0.84)	-1.39 (-8.07,5.30)	3.03 (-6.38,12.44)	6.12 (-3.19,15.44)	-10.30 (-22.23,1.63)
r-CBT	1.28 (-4.95,7.51)	5.69 (-3.39,14.77)	8.79 (-0.20,17.78)	-7.64 (-20.07,4.80)
r-CBT + r-ACT + mindfulness	4.41 (-6.28,15.11)	7.51 (-3.10,18.12)	-8.91 (-22.59,4.76)
r-CBT + education + mindfulness	3.10 (-9.40,15.59)	-13.33 (-28.52,1.86)
r-CBT + education + mindfulness + exercise	-16.42 (-31.56,-1.29)
Mindfulness	

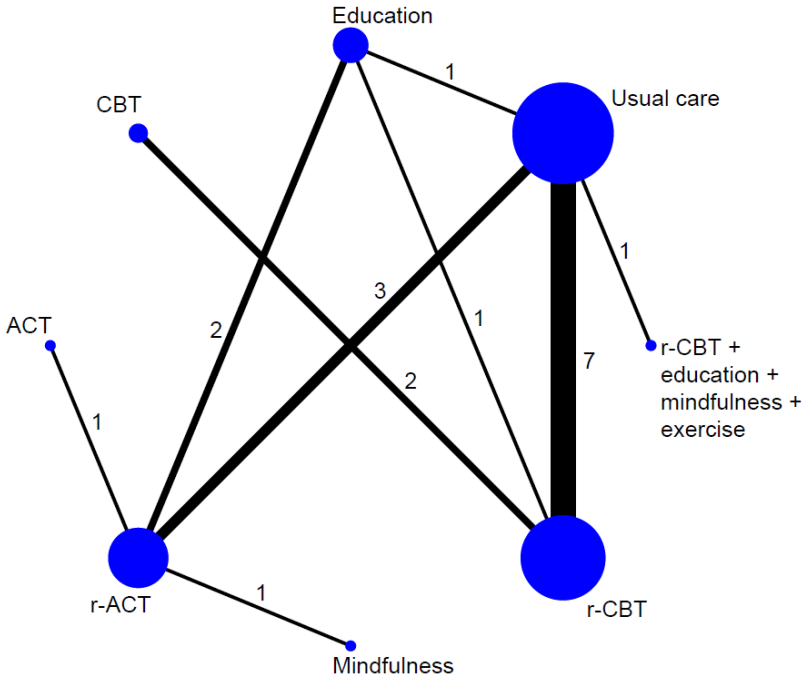
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference > 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.11. The results of the estimated direct and indirect treatment effects and their difference for physical function at post-treatment.

Comparison	Direct (SE)	Indirect (SE)	Difference (SE)	P-value
Education vs usual care	1.86 (4.38)	−4.47 (2.56)	6.32 (5.07)	0.213
Education vs r-ACT	4.56 (3.40)	1.23 (3.44)	3.32 (4.84)	0.492
Education vs r-CBT	−1.96 (2.83)	3.39 (3.39)	−5.35 (4.42)	0.226
r-ACT vs usual care	−5.36 (1.63)	−10.75 (5.79)	5.38 (6.02)	0.371
r-CBT vs usual care	−3.34 (0.97)	2.01 (4.32)	−5.35 (4.42)	0.226

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.6216.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.6. Network map of physical function at first follow-up (up to 6 months post-treatment).



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.12. Results of network meta-analysis with GRADE certainty of evidence for physical function at first follow-up (up to 6 months post-treatment).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	3.46 (-5.03,11.95)	-6.12 (-14.84,2.60)	-1.00 (-6.33,4.32)	**5.66 (0.66,10.66)**	-0.24 (-3.15,2.68)	4.63 (-4.06,13.31)	-1.04 (-13.62,11.55)
	ACT	-9.58 (-21.60,2.44)	-4.47 (-13.44,4.50)	2.20 (-4.66,9.06)	-3.70 (-12.49,5.10)	1.17 (-10.98,13.31)	-4.50 (-17.93,8.93)
		CBT	5.12 (-4.71,14.94)	**11.78 (1.91,21.65)**	5.88 (-2.33,14.10)	10.75 (-1.56,23.05)	5.08 (-10.11,20.27)
			Education	**6.67 (0.89,12.45)**	0.77 (-4.63,6.17)	5.63 (-4.56,15.82)	-0.03 (-12.95,12.88)
				r-ACT	-5.90 (-11.40,-0.39)	-1.03 (-11.05,8.99)	-6.70 (-18.25,4.85)
					r-CBT	4.86 (-4.30,14.03)	-0.80 (-13.60,11.99)
						r-CBT + education + mindfulness + exercise	-5.67 (-20.96,9.62)
							Mindfulness

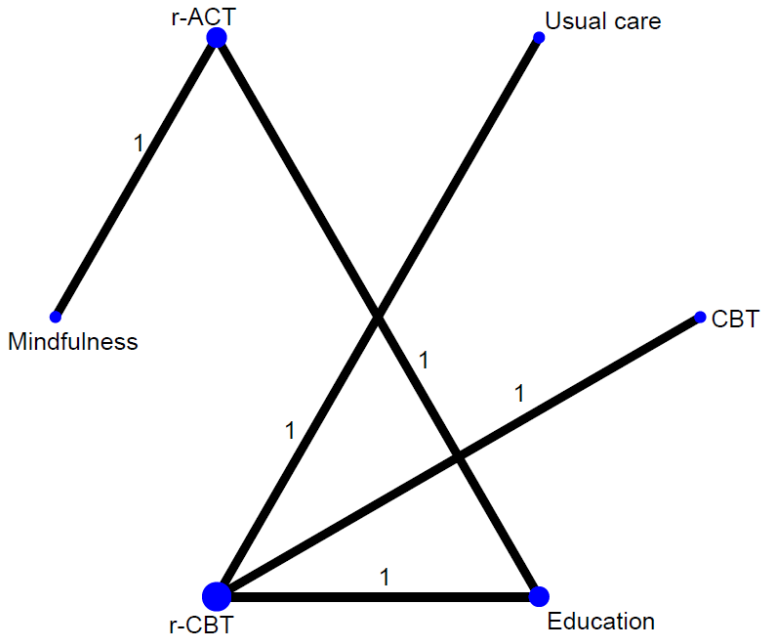
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference > 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.13. The results of the estimated direct and indirect treatment effects and their difference for physical function at first follow-up (up to 6 months post-treatment).

Comparison	Direct (SE)	Indirect (SE)	Difference (SE)	P-value
Education vs usual care	3.14 (4.63)	-0.45 (3.71)	3.59 (5.93)	0.545
Education vs r-ACT	8.14 (3.30)	3.13 (5.32)	5.01 (6.24)	0.423
Education vs r-CBT	-2.00 (3.79)	3.46 (3.77)	-5.46 (5.34)	0.307
r-ACT vs usual care	-4.81 (2.72)	-11.16 (6.62)	6.35 (7.21)	0.378
r-CBT vs usual care	-0.18 (1.48)	5.28 (5.16)	-5.46 (5.34)	0.307

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.8923.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.7. Network map of physical function at second follow-up (more than 6 months).



CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

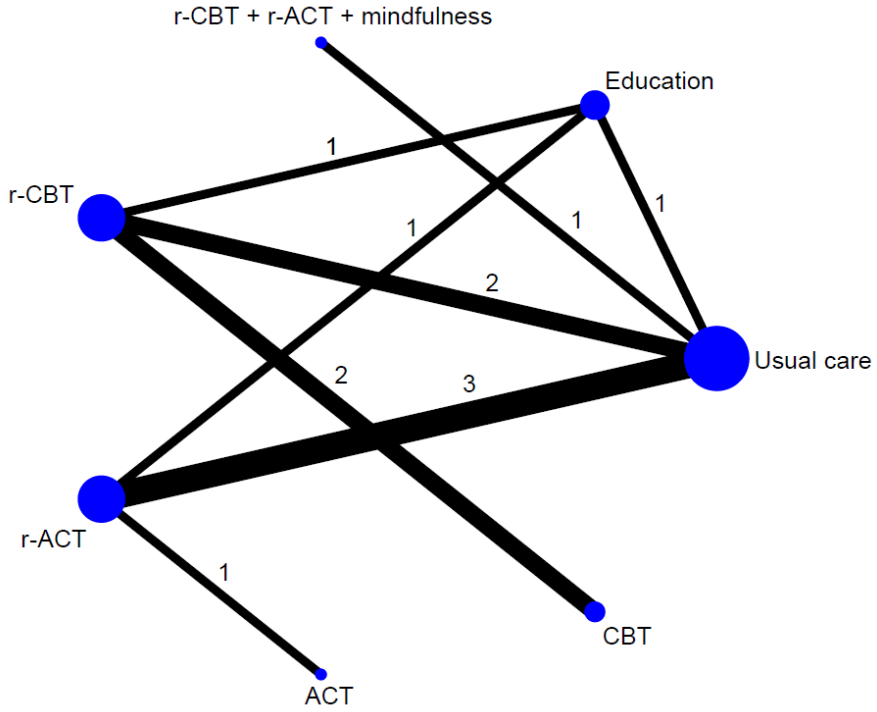
Table 3.14. Results of network meta-analysis with GRADE certainty of evidence for physical function at second follow-up (more than 6 months).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-5.65 (-17.94,6.64)	-3.11 (-13.69,7.47)	4.39 (-8.88,17.66)	-3.11 (-12.77,6.54)	2.39 (-17.35,22.12)
	CBT	2.54 (-6.21,11.30)	10.04 (-1.83,21.91)	2.54 (-5.07,10.15)	8.04 (-10.78,26.86)
		Education	7.50 (-0.51,15.51)	0.00 (-4.34,4.34)	5.50 (-11.16,22.16)
			r-ACT	-7.50 (-16.61,1.61)	-2.00 (-16.60,12.60)
				r-CBT	5.50 (-11.71,22.71)
					Mindfulness

Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference > 0 indicates the intervention in the column is superior to the comparator in the row.
CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.8. Network map of mental health at post-treatment.



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.15. Results of network meta-analysis with GRADE certainty of evidence for mental health at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	1.74 (-2.61,6.08)	-1.24 (-4.64,2.15)	0.98 (-2.27,4.24)	1.28 (-0.79,3.34)	0.46 (-1.36,2.27)	3.44 (-0.35,7.23)
	ACT	-2.98 (-8.46,2.50)	-0.75 (-5.83,4.33)	-0.46 (-4.28,3.36)	-1.28 (-5.95,3.39)	1.70 (-4.06,7.47)
		CBT	2.23 (-2.26,6.72)	2.52 (-1.41,6.45)	1.70 (-1.17,4.57)	4.68 (-0.40,9.77)
			Education	0.29 (-3.05,3.64)	-0.53 (-3.98,2.92)	2.46 (-2.54,7.45)
				r-ACT	-0.82 (-3.51,1.86)	2.16 (-2.15,6.48)
					r-CBT	2.98 (-1.21,7.18)
						r-CBT + r-ACT + mindfulness

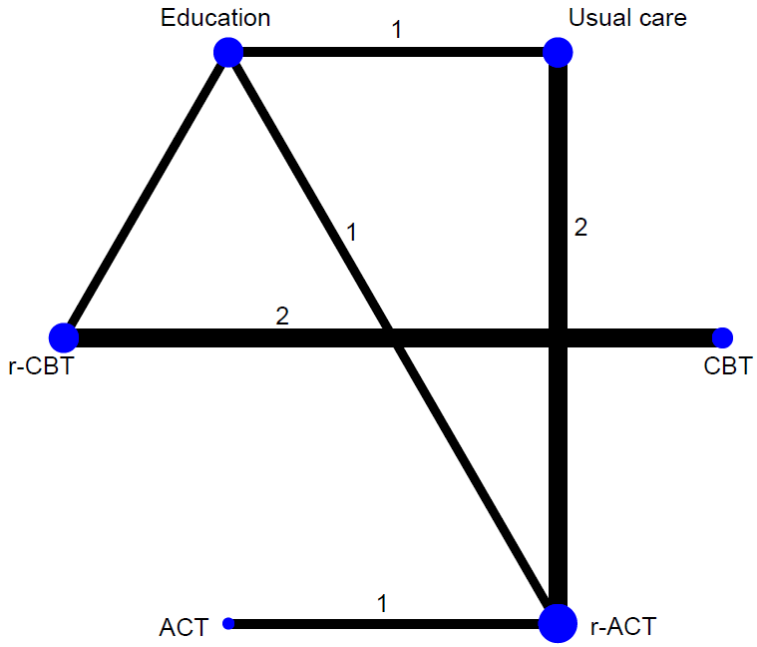
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference > 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.16. Results of the estimated direct and indirect treatment effects and their difference for mental health at post-treatment.

Comparison	Direct (SE)	Indirect (SE)	Difference (SE)	P-value
Education vs Usual care	-0.10 (2.1961)	-2.16 (2.5319)	2.06 (3.3506)	0.538
Education vs r-ACT	-0.78 (2.0389)	2.61 (2.9551)	-3.38 (3.5291)	0.338
Education vs r-CBT	0.00 (3.0637)	-0.73 (2.4270)	0.73 (3.9085)	0.852
r-CBT vs Usual care	-0.42 (1.1437)	-1.15 (3.7152)	0.73 (3.9079)	0.851

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.5326.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.9. Network map of mental health at first follow-up (up to 6 months post-treatment).



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.17. Results of network meta-analysis with GRADE certainty of evidence for mental health at first follow-up (up to 6 months post-treatment).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-0.34 (-4.96,4.27)	-1.12 (-8.75,6.50)	-1.26 (-5.19,2.68)	1.37 (-0.79,3.53)	-0.26 (-7.21,6.70)
	ACT	-0.78 (-9.43,7.86)	-0.92 (-6.58,4.75)	1.71 (-2.37,5.79)	0.08 (-7.98,8.14)
		CBT	-0.13 (-6.66,6.40)	2.49 (-5.13,10.11)	0.87 (-2.26,3.99)
			Education	2.63 (-1.30,6.56)	1.00 (-4.73,6.73)
				r-ACT	-1.63 (-8.58,5.32)
					r-CBT

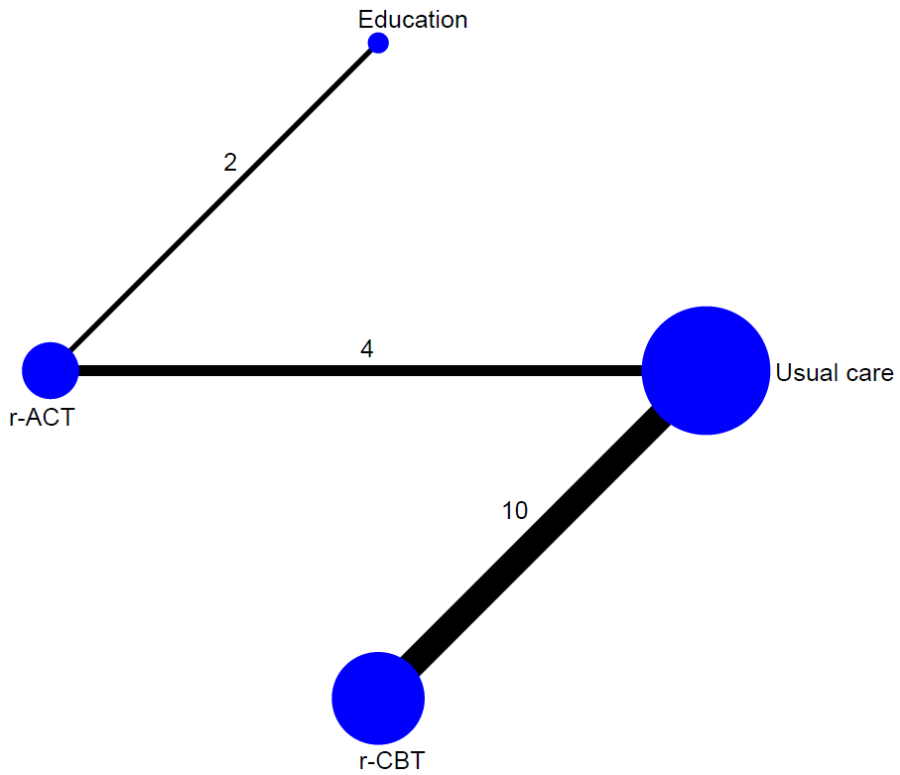
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference > 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.18. Results of the estimated direct and indirect treatment effects and their difference for mental health at first follow-up.

Comparison	Direct (SE)	Indirect (SE)	Difference (SE)	P-value
Education vs Usual care	2.00 (2.8636)	-1.91 (6.6061)	3.91 (7.1910)	0.586
Education vs r-ACT	1.89 (2.8602)	5.81 (6.6356)	-3.91 (7.209)	0.587

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.5882.
r-ACT: remotely delivered acceptance and commitment therapy; SE: standard error.

Figure 3.10. Network map of quality of life at post-treatment.



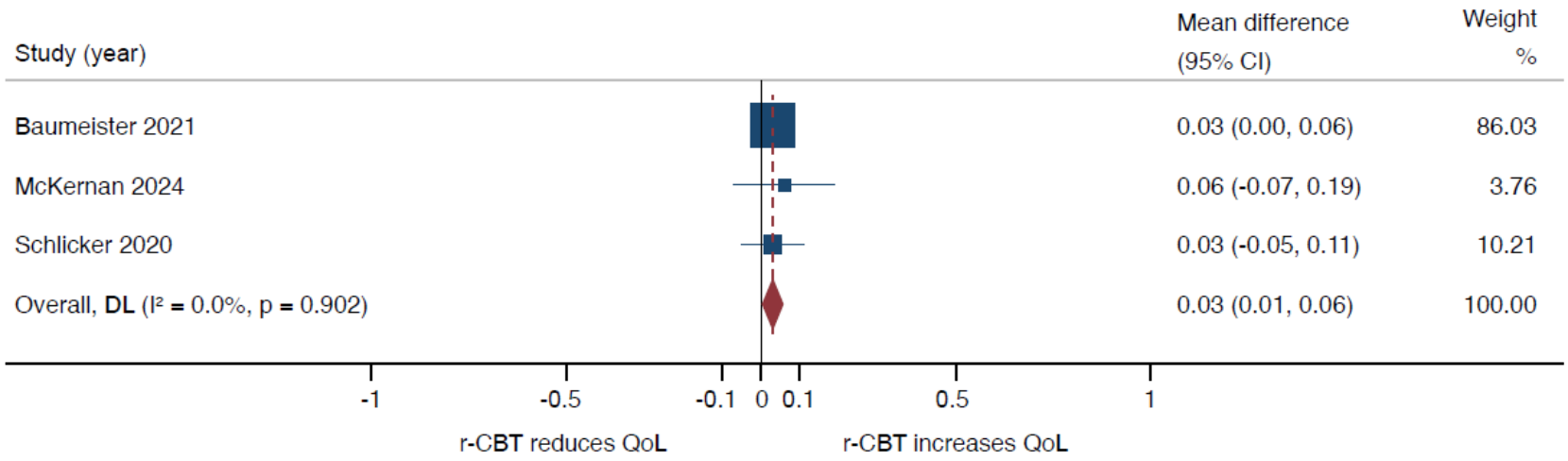
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.19. Results of network meta-analysis with GRADE certainty of evidence for quality of life at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence
Usual care	0.05 (-0.00,0.11)	**0.06 (0.02,0.10)**	**0.05 (0.03,0.08)**
	Education	0.01 (-0.03,0.04)	0.00 (-0.06,0.06)
		r-ACT	-0.01 (-0.06,0.04)
			r-CBT

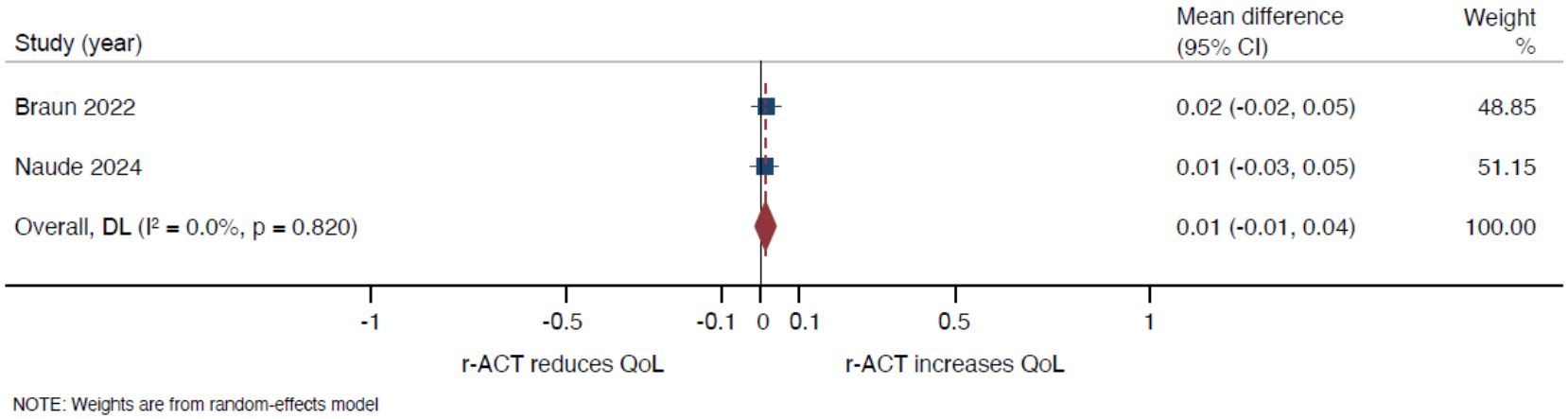
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference > 0 indicates the intervention in the column is superior to the comparator in the row.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.11. Forest plot of the effect of r-CBT versus usual care on quality of life at first follow-up (up to 6 months post-treatment).



r-CBT: remotely delivered cognitive behavioural therapy; CI: confidence interval; QoL: quality of life.

Figure 3.12. Forest plot of the effect of r-ACT versus education on quality of life at first follow-up (up to 6 months post-treatment).



r-ACT: remotely delivered acceptance and commitment therapy; CI: confidence interval; QoL: quality of life.

Table 3.20. Summary of findings table for quality of life at first follow-up (up to 6 months post-treatment).

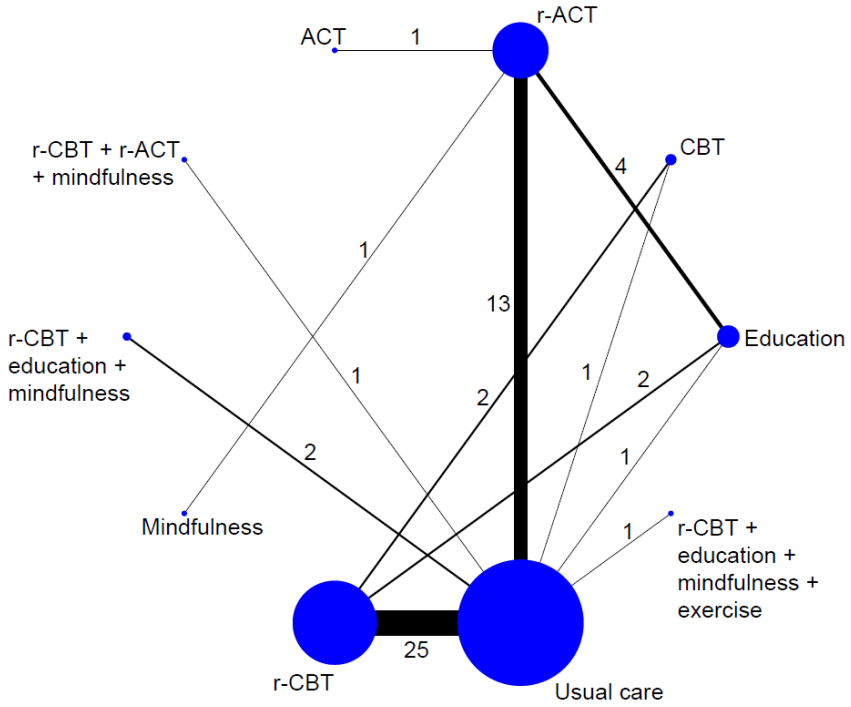
# of trials (# of patients)	Comparison	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Treatment effect (95% CI)	Certainty of evidence
Quality of life at first follow-up (up to 6 months post-treatment), 0 to 1 point EQ-5D; higher is better; the MID = 0.1 points								
3 trials (358)	r-CBT vs. usual care	No concerns	No inconsistency (I^2 = 0.0%)	No serious indirectness	Serious concerns [a]	Undetected	MD 0.03 points (95% CI 0.01 to 0.06)	Moderate
2 trials (201)	r-ACT vs. education	Serious concerns [b]	No inconsistency (I^2 = 0.0%)	No serious indirectness	Serious concerns [a]	Undetected	MD 0.01 points (95% CI -0.01 to 0.04)	Low

CI: confidence interval; MID: minimally important difference; r-CBT: remotely delivered cognitive behavioural therapy; r-ACT: remotely delivered acceptance and commitment therapy.

a. The 95% CI does not cross the MID=0.1, indicating little to no effect of SCS in improving quality of life, and the CI is narrow enough to be considered precise. However, the effect estimate was informed by < 400 participants. Therefore, we decided to downgrade once.

b. Studies included in this analysis were either at high risk of bias or had some concerns.

Figure 3.13. Network map of depression at post-treatment.



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.21. Results of network meta-analysis with GRADE certainty of evidence for depression at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-2.27 (-5.24,0.69)	**-2.30 (-3.78,-0.81)**	**-1.98 (-3.12,-0.84)**	**-1.75 (-2.46,-1.05)**	**-1.80 (-2.32,-1.28)**	-1.21 (-3.54,1.12)	-1.32 (-3.32,0.68)	-0.80 (-3.87,2.27)	-0.03 (-3.17,3.11)
	ACT	-0.02 (-3.34,3.29)	0.30 (-2.78,3.38)	0.52 (-2.36,3.40)	0.47 (-2.53,3.48)	1.07 (-2.70,4.84)	0.95 (-2.62,4.53)	1.47 (-2.80,5.74)	2.24 (-1.96,6.44)
		CBT	0.32 (-1.52,2.16)	0.54 (-1.09,2.18)	0.50 (-0.94,1.94)	1.09 (-1.67,3.85)	0.98 (-1.52,3.47)	1.50 (-1.92,4.91)	2.27 (-1.20,5.73)
			Education	0.22 (-0.86,1.31)	0.18 (-1.01,1.37)	0.77 (-1.82,3.36)	0.66 (-1.65,2.96)	1.18 (-2.10,4.45)	1.95 (-1.30,5.19)
				r-ACT	-0.05 (-0.90,0.81)	0.55 (-1.89,2.98)	0.43 (-1.69,2.56)	0.95 (-2.20,4.11)	1.72 (-1.33,4.78)
					r-CBT	0.59 (-1.79,2.98)	0.48 (-1.59,2.55)	1.00 (-2.12,4.11)	1.77 (-1.41,4.94)
						r-CBT + r-ACT + mindfulness	-0.11 (-3.18,2.96)	0.41 (-3.45,4.26)	1.18 (-2.73,5.08)
							r-CBT+ education + mindfulness	0.52 (-3.15,4.19)	1.29 (-2.43,5.01)
								r-CBT+ education + mindfulness + exercise	0.77 (-3.62,5.16)
									Mindfulness

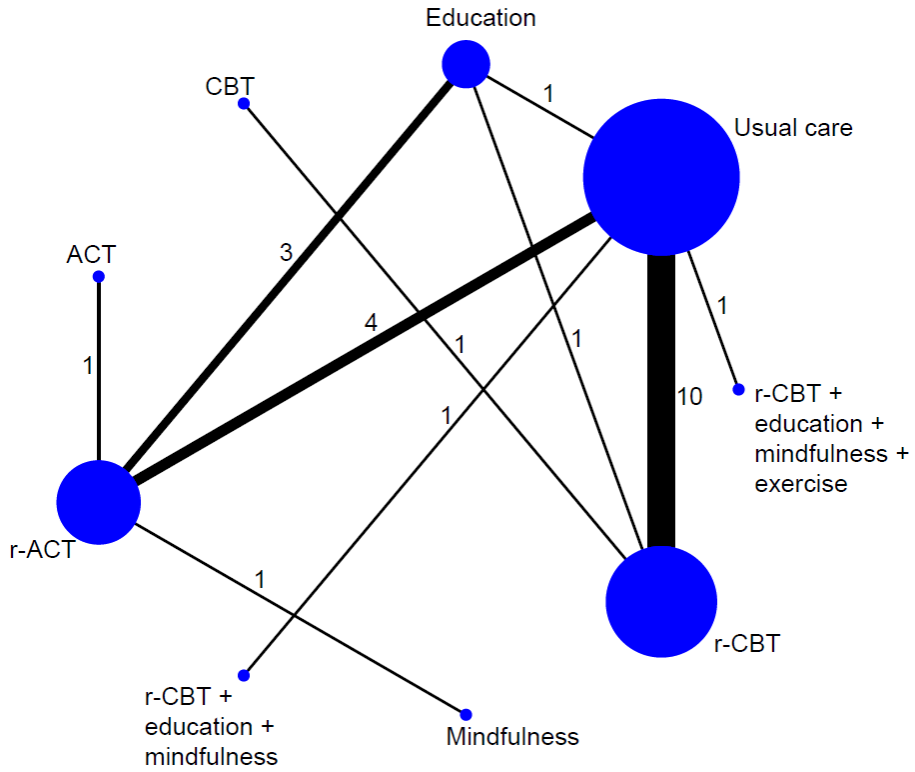
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.22. Results of the estimated direct and indirect treatment effects and their difference for depression at post-treatment.

Comparison	**Direct (SE)**	**Indirect (SE)**	**Difference (SE)**	**P-value**
CBT vs usual care	2.91 (1.23)	1.86 (1.03)	1.05 (1.65)	0.525
Education vs usual care	0.64 (1.16)	2.41 (0.66)	-1.77 (1.34)	0.186
Education vs r-ACT	0.18 (0.66)	1.32 (1.07)	-1.13 (1.25)	0.919
Education vs r-CBT	0.86 (1.05)	-0.16 (7.74)	1.02 (1.28)	0.427
r-ACT vs usual care	1.73 (3.78)	2.06 (1.32)	-0.33 (1.37)	0.809
r-CBT vs usual care	1.83 (0.27)	1.20 (1.16)	0.63 (1.19)	0.596

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.8407.
CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Figure 3.14. Network map of depression at first follow-up (up to 6 months post-treatment).



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.23. Results of network meta-analysis with GRADE certainty of evidence for depression at first follow-up (up to 6 months post-treatment).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-0.45 (-2.93,2.02)	-0.33 (-1.73,1.08)	-0.34 (-1.30,0.62)	**-1.52 (-2.31,-0.74)**	**-0.87 (-1.39,-0.35)**	-1.03 (-3.36,1.30)	-0.32 (-2.82,2.18)	-0.77 (-3.39,1.86)
	ACT	0.13 (-2.71,2.96)	0.12 (-2.38,2.61)	-1.07 (-3.42,1.28)	-0.42 (-2.94,2.10)	-0.57 (-3.97,2.82)	0.13 (-3.38,3.65)	-0.31 (-3.74,3.12)
		CBT	-0.01 (-1.68,1.66)	-1.20 (-2.79,0.40)	-0.54 (-1.85,0.76)	-0.70 (-3.42,2.02)	0.01 (-2.86,2.87)	-0.44 (-3.41,2.53)
			Education	**-1.19 (-2.05,-0.32)**	-0.53 (-1.57,0.51)	-0.69 (-3.21,1.83)	0.02 (-2.66,2.70)	-0.43 (-3.08,2.22)
				r-ACT	0.65 (-0.26,1.57)	0.50 (-1.96,2.95)	1.20 (-1.41,3.82)	0.76 (-1.75,3.27)
					r-CBT	-0.16 (-2.54,2.23)	0.55 (-2.00,3.10)	0.11 (-2.56,2.77)
						r-CBT + education + mindfulness	0.71 (-2.71,4.12)	0.26 (-3.25,3.77)
							r-CBT + education + mindfulness + exercise	-0.45 (-4.07,3.18)
								Mindfulness

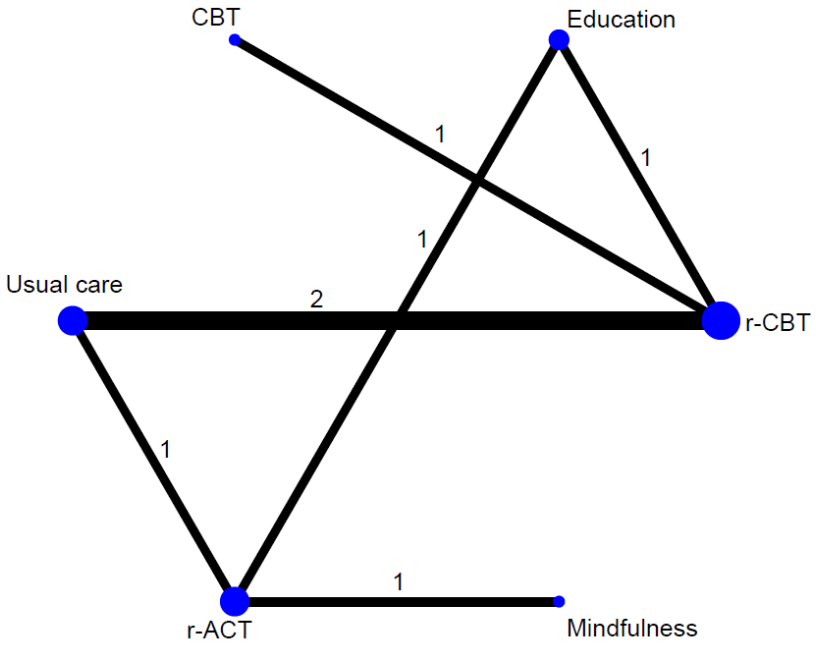
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.24. Results of the estimated direct and indirect treatment effects and their difference for depression at first follow-up (up to 6 months post-treatment).

Comparison	**Direct (SE)**	**Indirect (SE)**	**Difference (SE)**	**P-value**
Education vs usual care	-0.12 (0.74)	0.70 (0.66)	-0.81 (0.99)	0.410
Education vs r-ACT	-1.10 (0.48)	-1.65 (1.10)	0.55 (1.20)	0.646
Education vs r-CBT	-0.86 (1.08)	-0.43 (0.61)	-0.43 (1.24)	0.729
r-ACT vs usual care	1.71 (0.43)	0.10 (1.19)	1.61 (1.26)	0.202
r-CBT vs usual care	0.85 (0.27)	1.28 (1.21)	-0.43 (1.24)	0.729

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.4969.
SE: standard error; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.15. Network map of depression at second follow-up (more than 6 months).



CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.25. Results of network meta-analysis with GRADE certainty of evidence for depression at second follow-up (more than 6 months).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-0.90 (-2.82,1.02)	-1.52 (-3.57,0.54)	-2.05 (-4.24,0.13)	**-1.22 (-2.36,-0.07)**	-2.25 (-6.02,1.53)
	CBT	-0.61 (-3.07,1.84)	-1.15 (-3.81,1.51)	-0.31 (-1.86,1.23)	-1.34 (-5.41,2.73)
		Education	-0.54 (-2.19,1.12)	0.30 (-1.61,2.21)	-0.73 (-4.23,2.77)
			r-ACT	0.84 (-1.33,3.00)	-0.19 (-3.27,2.89)
				r-CBT	-1.03 (-4.80,2.74)
					Mindfulness

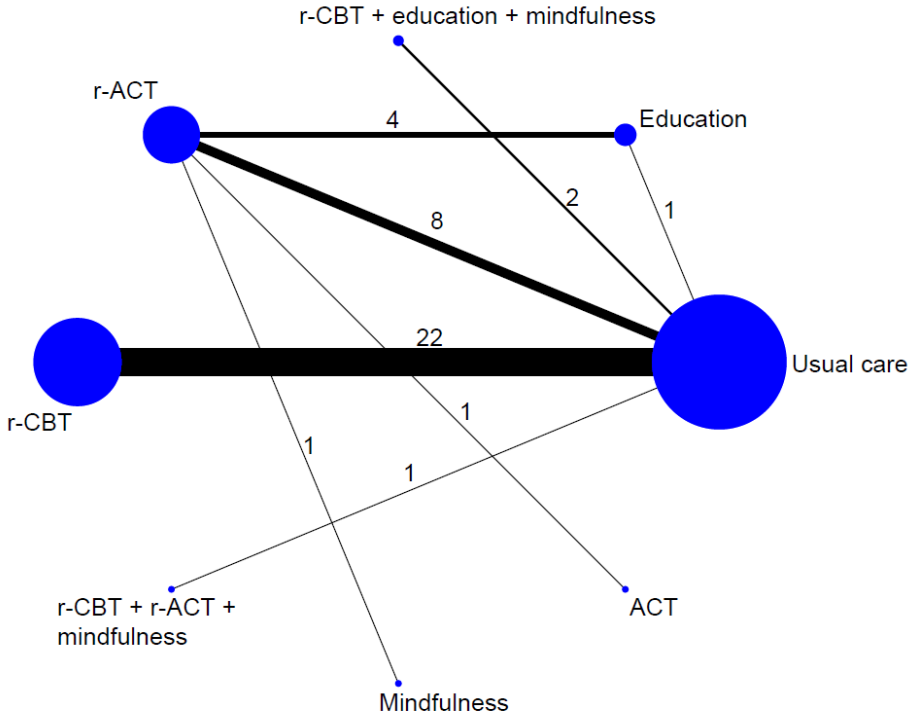
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.26. Results of the estimated direct and indirect treatment effects and their difference for depression at second follow-up (more than 6 months).

Comparison	**Direct (SE)**	**Indirect (SE)**	**Difference (SE)**	**P-value**
Education vs r-ACT	-0.33 (0.93)	-1.51 (2.03)	1.18 (2.23)	0.598
Education vs r-CBT	0.00 (1.13)	1.18 (1.92)	-1.18 (2.23)	0.598
r-ACT vs usual care	2.64 (1.57)	1.46 (1.59)	1.18 (2.23)	0.598
r-CBT vs usual care	1.13 (0.61)	2.31 (2.15)	-1.18 (2.23)	0.598

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power, and thus, typically, a p-value < 0.1 is typically considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.5979.
SE: standard error; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.16. Network map of anxiety at post-treatment.



ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.27. Results of network meta-analysis with GRADE certainty of evidence for anxiety at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-1.72 (-4.16,0.73)	-0.03 (-1.25,1.19)	**-0.84 (-1.64,-0.03)**	**-1.41 (-1.93,-0.89)**	-0.03 (-1.89,1.83)	-0.24 (-1.91,1.43)	0.23 (-2.38,2.84)
	ACT	1.69 (-0.83,4.22)	0.88 (-1.43,3.19)	0.31 (-2.19,2.81)	1.69 (-1.38,4.76)	1.48 (-1.49,4.44)	1.95 (-1.44,5.34)
		Education	-0.81 (-1.83,0.22)	**-1.38 (-2.70,-0.06)**	0.00 (-2.22,2.22)	-0.21 (-2.28,1.86)	0.26 (-2.43,2.95)
			r-ACT	-0.57 (-1.53,0.39)	0.81 (-1.22,2.83)	0.60 (-1.26,2.46)	1.07 (-1.41,3.55)
				r-CBT	1.38 (-0.55,3.31)	1.17 (-0.58,2.92)	1.64 (-1.02,4.30)
					r-CBT + r-ACT + mindfulness	-0.21 (-2.71,2.29)	0.26 (-2.94,3.47)
						r-CBT + education + mindfulness	0.47 (-2.63,3.58)
							Mindfulness

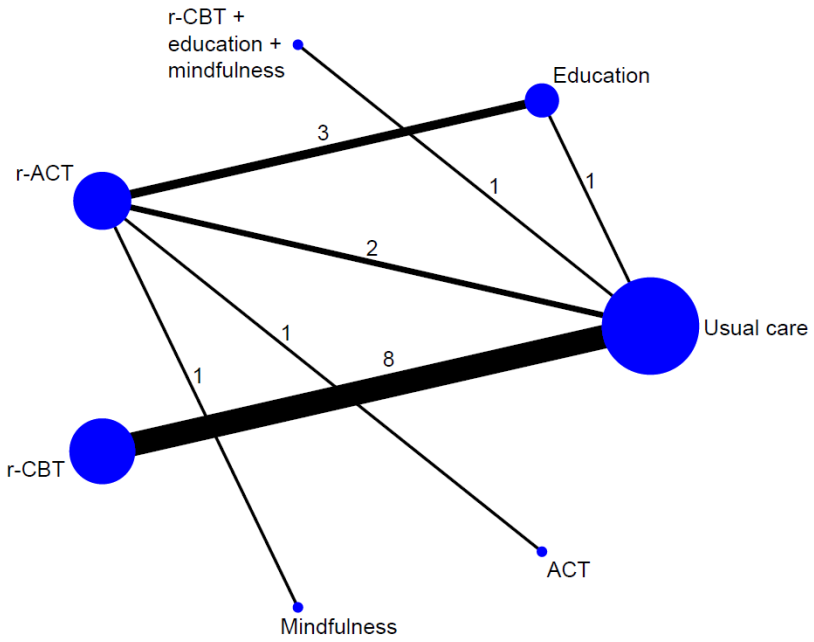
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.28. Results of the estimated direct and indirect treatment effects and their difference for anxiety at post-treatment.

Comparison	**Direct (SE)**	**Indirect (SE)**	**Difference (SE)**	**P-value**
Education vs usual care	0.79 (1.04)	-0.40 (0.78)	1.20 (1.30)	0.355

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.3639.
SE: standard error.

Figure 3.17. Network map of anxiety at first follow-up (up to 6 months post-treatment).



ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

Table 3.29. Results of network meta-analysis with GRADE certainty of evidence for anxiety at first follow-up (up to 6 months post-treatment).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-1.58 (-3.38,0.22)	-0.06 (-0.92,0.80)	-0.74 (-1.48,0.01)	**-0.69 (-1.11,-0.26)**	-0.25 (-2.07,1.57)	-0.74 (-2.87,1.39)
	ACT	1.52 (-0.25,3.29)	0.84 (-0.80,2.48)	0.89 (-0.96,2.74)	1.33 (-1.23,3.89)	0.84 (-1.74,3.42)
		Education	**-0.68 (-1.34,-0.02)**	-0.63 (-1.59,0.33)	-0.19 (-2.20,1.82)	-0.68 (-2.78,1.42)
			r-ACT	0.05 (-0.81,0.91)	0.49 (-1.48,2.45)	-0.00 (-1.99,1.99)
				r-CBT	0.44 (-1.43,2.30)	-0.05 (-2.22,2.12)
					r-CBT + education + mindfulness	-0.49 (-3.29,2.31)
						Mindfulness

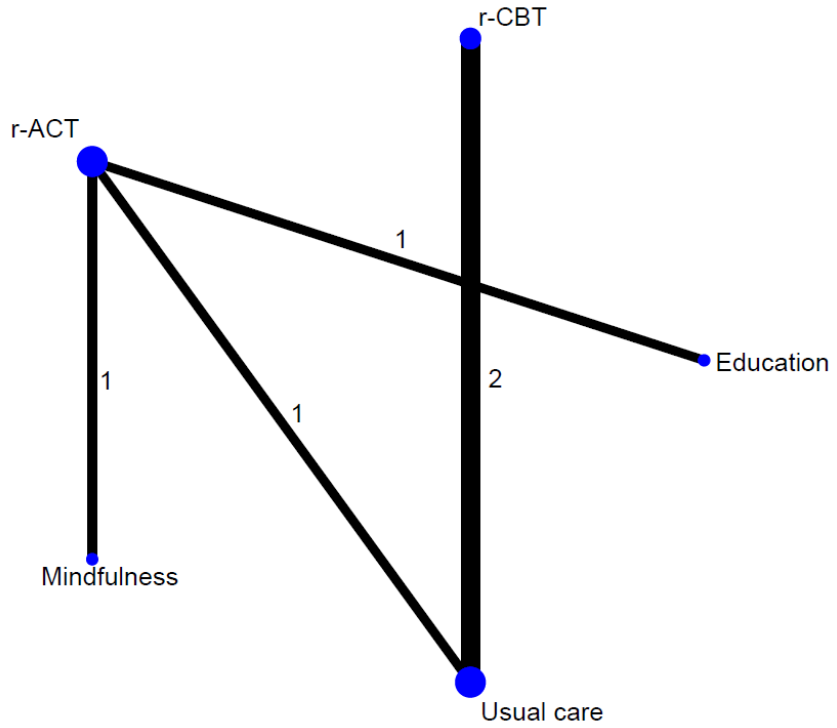
Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.30. Results of the estimated direct and indirect treatment effects and their difference for anxiety at first follow-up (up to 6 months post-treatment).

Comparison	**Direct (SE)**	**Indirect (SE)**	**Difference (SE)**	**P-value**
Education vs usual care	0.20 (0.59)	-0.20 (0.76)	0.40 (0.96)	0.676

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.8979.
SE: standard error.

Figure 3.18. Network map of anxiety at second follow-up (more than 6 months).



r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

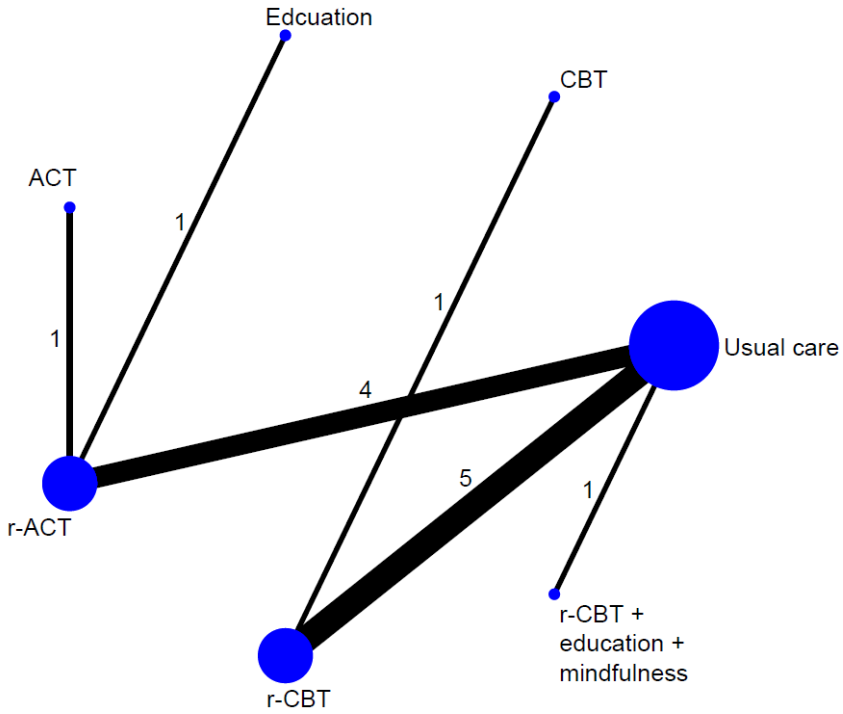
Table 3.31. Results of network meta-analysis with GRADE certainty of evidence for anxiety at second follow-up (more than 6 months).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	0.58 (-2.00,3.16)	**-1.98 (-3.87,-0.09)**	-0.73 (-2.41,0.96)	-1.32 (-4.17,1.53)
	Education	**-2.56 (-4.32,-0.80)**	-1.31 (-4.39,1.78)	-1.90 (-4.67,0.87)
		r-ACT	1.25 (-1.27,3.78)	0.66 (-1.48,2.80)
			r-CBT	-0.59 (-3.90,2.71)
				Mindfulness

Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.19. Network map of sleep quality at post-treatment.



CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

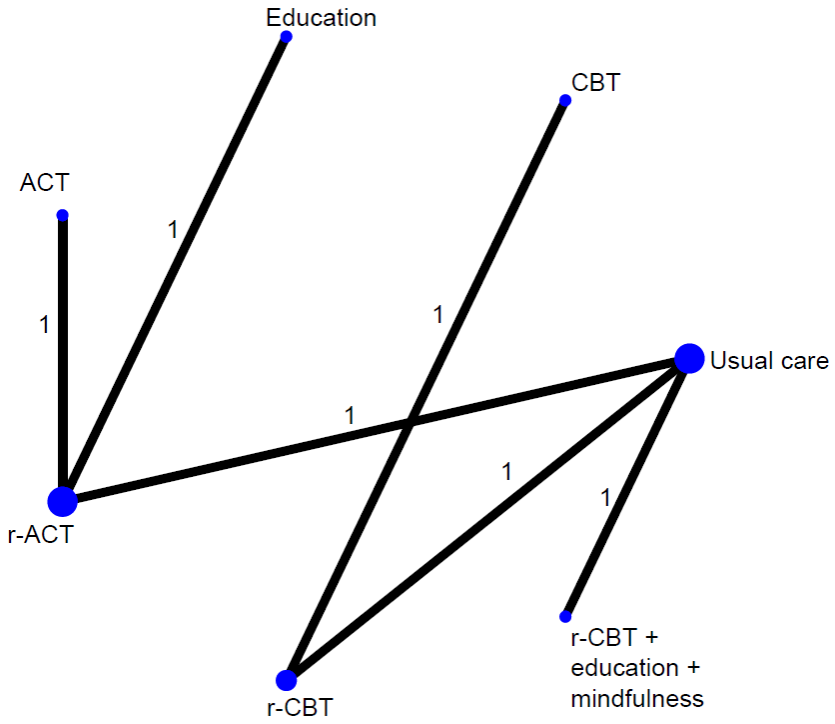
Table 3.32. Results of network meta-analysis with GRADE certainty of evidence for sleep quality at post-treatment.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-2.79 (-5.89,0.30)	0.04 (-2.81,2.88)	**-3.71 (-7.06,-0.36)**	**-2.51 (-4.00,-1.02)**	-1.22 (-2.44,0.00)	-0.35 (-3.59,2.90)
	ACT	2.83 (-1.37,7.02)	-0.92 (-4.97,3.13)	0.28 (-2.43,2.99)	1.57 (-1.74,4.89)	2.44 (-2.04,6.93)
		CBT	-3.75 (-8.14,0.64)	-2.55 (-5.75,0.65)	-1.25 (-3.82,1.32)	-0.38 (-4.70,3.93)
			Education	1.20 (-1.80,4.20)	2.49 (-1.06,6.05)	3.36 (-1.31,8.03)
				r-ACT	1.29 (-0.61,3.20)	2.16 (-1.41,5.74)
					r-CBT	0.87 (-2.60,4.34)
						r-CBT + education + mindfulness

Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.20. Network map of sleep quality at first follow-up (up to 6 months post-treatment).



ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.
The size of each node (circle) reflects the number of patients assigned to that specific treatment and the thickness of the connecting lines indicates how many studies have compared those treatments.

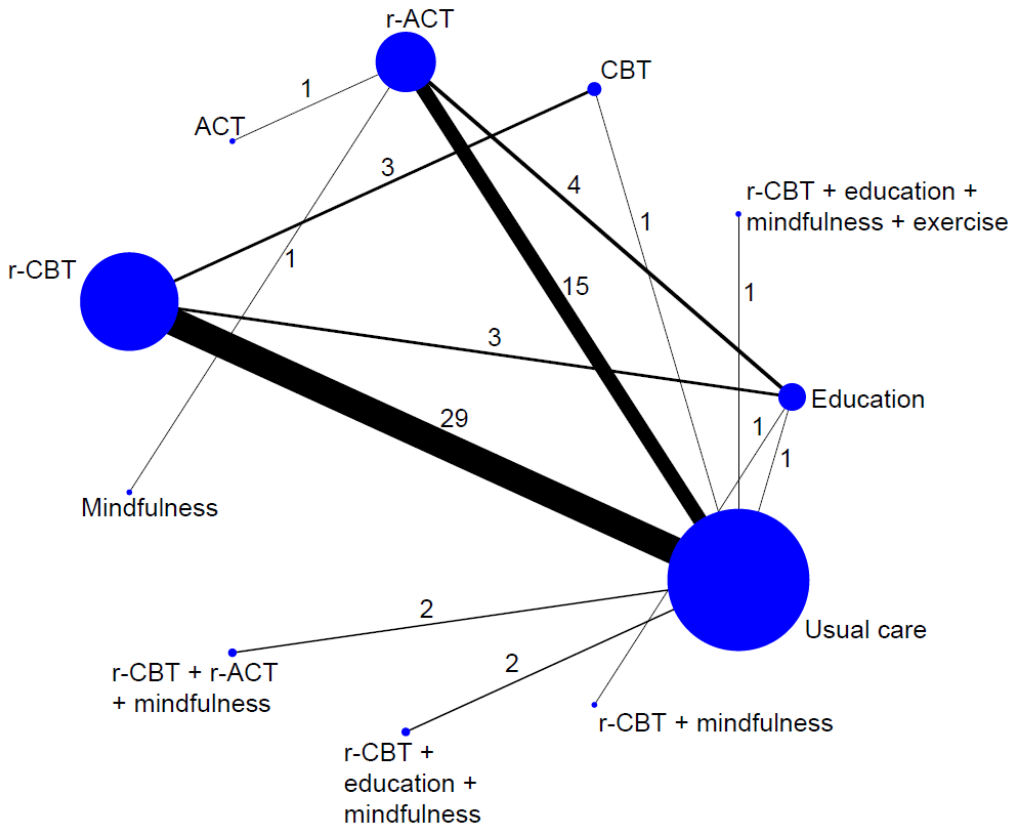
Table 3.33. Results of network meta-analysis with GRADE certainty of evidence for sleep quality at first follow-up (up to 6 months post-treatment).

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	-2.72 (-6.30,0.86)	-0.18 (-1.95,1.60)	-2.41 (-6.20,1.39)	-2.55 (-5.45,0.36)	-0.34 (-0.86,0.19)	-1.51 (-4.25,1.24)
	ACT	2.54 (-1.45,6.54)	0.31 (-2.90,3.53)	0.17 (-1.91,2.26)	2.38 (-1.23,6.00)	1.21 (-3.30,5.72)
		CBT	-2.23 (-6.42,1.96)	-2.37 (-5.78,1.04)	-0.16 (-1.86,1.54)	-1.33 (-4.60,1.94)
			Education	-0.14 (-2.58,2.30)	2.07 (-1.76,5.90)	0.90 (-3.79,5.59)
				r-ACT	2.21 (-0.74,5.16)	1.04 (-2.96,5.04)
					r-CBT	-1.17 (-3.97,1.62)
						r-CBT + education + mindfulness

Results are mean differences (95% CIs) from the network meta-analysis. For each comparison (column vs. row), a mean difference < 0 indicates the intervention in the column is superior to the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Figure 3.21. Network map of dropout rate.



The size of each node (circle) reflects the number of patients assigned to that specific treatment, and the thickness of the connecting lines indicates how many studies have compared those treatments.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.34. Results of network meta-analysis with GRADE certainty of evidence for dropout rate.

High certainty of evidence	Moderate certainty of evidence	Low certainty of evidence	Very Low certainty of evidence

Usual care	0.77 (0.31,1.90)	1.57 (0.82,3.00)	1.42 (0.94,2.14)	**1.55 (1.18,2.03)**	**1.46 (1.18,1.81)**	1.85 (0.82,4.14)	2.18 (0.99,4.79)	1.10 (0.42,2.89)	1.58 (0.65,3.84)	1.55 (0.69,3.49)
	ACT	2.03 (0.67,6.12)	1.84 (0.71,4.74)	2.01 (0.85,4.73)	1.89 (0.75,4.74)	2.39 (0.71,7.99)	2.82 (0.85,9.31)	1.42 (0.38,5.33)	2.05 (0.60,7.01)	2.01 (0.64,6.34)
		CBT	0.91 (0.43,1.91)	0.99 (0.49,1.98)	0.93 (0.50,1.72)	1.18 (0.42,3.32)	1.39 (0.50,3.85)	0.70 (0.22,2.25)	1.01 (0.34,2.98)	0.99 (0.35,2.78)
			Education	1.09 (0.73,1.63)	1.03 (0.67,1.56)	1.30 (0.53,3.21)	1.53 (0.63,3.73)	0.77 (0.27,2.21)	1.11 (0.51,2.45)	1.09 (0.46,2.59)
				r-ACT	0.94 (0.68,1.31)	1.19 (0.51,2.79)	1.41 (0.61,3.23)	0.71 (0.26,1.94)	1.02 (0.42,2.47)	1.00 (0.47,2.15)
					r-CBT	1.26 (0.55,2.91)	1.49 (0.66,3.37)	0.75 (0.28,2.03)	1.08 (0.44,2.64)	1.06 (0.46,2.45)
						r-CBT + r-ACT + mindfulness	1.18 (0.38,3.65)	0.60 (0.17,2.10)	0.86 (0.26,2.85)	0.84 (0.27,2.64)
							r-CBT + education + mindfulness	0.51 (0.15,1.76)	0.73 (0.22,2.38)	0.71 (0.23,2.21)
								r-CBT + education + mindfulness + exercise	1.44 (0.39,5.34)	1.41 (0.40,4.98)
									r-CBT + mindfulness	0.98 (0.31,3.15)
										Mindfulness

Results are risk ratio (95% CIs) from the network meta-analysis. For each comparison (column vs. row), RR > 1 indicates the intervention in the column has more dropouts than the comparator in the row.
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.35. Results of the estimated direct and indirect treatment effects and their difference for the dropout rate.

Comparison	**Direct (SE)**	**Indirect (SE)**	**Difference (SE)**	**P-value**
CBT vs usual care	-1.56 (1.18)	-0.31 (0.36)	-1.25 (1.28)	0.329
education vs usual care	-0.77 (0.47)	-0.24 (0.24)	-0.53 (0.53)	0.323
education vs r-ACT	0.27 (0.25)	-0.29 (0.35)	0.56 (0.43)	0.189
education vs r-CBT	-0.17 (0.32)	0.19 (0.29)	-0.37 (0.43)	0.396
r-ACT vs usual care	-0.38 (0.14)	-1.02 (0.45)	0.64 (0.47)	0.173
r-CBT vs usual care	-0.40 (0.11)	-0.12 (0.40)	-0.28 (0.42)	0.508

The p-value for the difference is a test of consistency (coherence). Statistical tests of inconsistency have low power and thus, typically, a p-value < 0.1 is considered an important inconsistency. This table includes only comparisons where both direct and indirect evidence are available. P-value for global test of inconsistency = 0.5206.
CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy; SE: standard error.

Table 3.36. Network meta-regression results for subgroup analysis of female percentage for pain intensity at post-treatment.

Treatment	Coefficient	P-value	95% Confidence Interval
CBT	0.015	0.390	(-0.02, 0.05)
Education	0.002	0.694	(-0.01, 0.01)
r-ACT	**-0.017**	**0.004**	**(-0.03, -0.01)**
r-CBT	**-0.005**	**0.018**	**(-0.009, -0.001)**
r-CBT + r-ACT + mindfulness	0.054	0.775	(-0.32, 0.42)

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.37. Network meta-regression results for subgroup analysis of female percentage for physical function at first follow-up (up to 6 months post-treatment).

Treatment	Coefficient	P-value	95% Confidence Interval
CBT	0.0278	0.894	(-0.3808, 0.4363)
Education	-0.0502	0.528	(-0.2058, 0.1055)
r-ACT	**-0.6702**	**0.022**	**(-1.2448, -0.0956)**
r-CBT	-0.0038	0.934	(-0.0943, 0.0867)

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.38. Network meta-regression results for subgroup analysis of female percentage for depression at post-treatment.

Treatment	Coefficient	P-value	95% Confidence Interval
CBT	-0.041	0.074	(-0.087, 0.004)
Education	-0.025	0.280	(-0.071, 0.020)
r-ACT	0.018	0.393	(-0.024, 0.060)
r-CBT	**-0.037**	**0.026**	**(-0.070, -0.004)**
r-CBT+ education+ mindfulness	-0.014	0.619	(-0.072, 0.043)

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.39. Network meta-regression results for subgroup analysis of female percentage for dropout rate.

Treatment	Coefficient	P-value	95% Confidence Interval
CBT	-0.015	0.165	(-0.036, 0.006)
Education	**-0.017**	**0.016**	**(-0.030, -0.003)**
r-ACT	-0.004	0.532	(-0.018, 0.009)
r-CBT	**-0.013**	**0.011**	**(-0.023, -0.003)**
r-CBT+ education+ mindfulness	**0.032**	**0.002**	**(0.011, 0.053)**
r-CBT+ r-ACT + mindfulness	0.184	0.675	(-0.677, 1.046)

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Table 3.40. Network meta-regression results for subgroup analysis of therapist interaction vs. no interaction for dropout rate.

Treatment	**Coefficient**	**P-value**	**95% Confidence Interval**
Education	0.391	0.999	(-501.967, 502.750)
r-ACT	-0.396	0.359	(-1.241, 0.450)
r-CBT	-0.145	0.547	(-0.618, 0.327)
r-CBT+ education+ mindfulness	**-2.182**	**0.005**	**(-3.696, -0.669)**

r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

References

1. Treede RD, Rief W, Barke A, Aziz Q, Bennett MI, Benoliel R, et al. A classification of chronic pain for ICD-11. Pain. 2015;156(6):1003-7.
2. Cohen SP, Vase L, Hooten WM. Chronic pain: an update on burden, best practices, and new advances. The Lancet. 2021;397(10289):2082-97.
3. Zimmer Z, Fraser K, Grol-Prokopczyk H, Zajacova A. A global study of pain prevalence across 52 countries: examining the role of country-level contextual factors. Pain. 2022;163(9):1740-50.
4. Larsson C, Hansson EE, Sundquist K, Jakobsson U. Chronic pain in older adults: prevalence, incidence, and risk factors. Scand J Rheumatol. 2017;46(4):317-25.
5. Mills SEE, Nicolson KP, Smith BH. Chronic pain: a review of its epidemiology and associated factors in population-based studies. Br J Anaesth. 2019;123(2):e273-e83.
6. Shupler MS, Kramer JK, Cragg JJ, Jutzeler CR, Whitehurst DGT. Pan-Canadian Estimates of Chronic Pain Prevalence From 2000 to 2014: A Repeated Cross-Sectional Survey Analysis. J Pain. 2019;20(5):557-65.
7. Fitzcharles MA, Cohen SP, Clauw DJ, Littlejohn G, Usui C, Häuser W. Nociplastic pain: towards an understanding of prevalent pain conditions. Lancet. 2021;397(10289):2098-110.
8. Kosek E, Cohen M, Baron R, Gebhart GF, Mico JA, Rice ASC, et al. Do we need a third mechanistic descriptor for chronic pain states? Pain. 2016;157(7):1382-6.
9. Bidari A, Ghavidel-Parsa B. Nociplastic pain concept, a mechanistic basis for pragmatic approach to fibromyalgia. Clin Rheumatol. 2022;41(10):2939-47.
10. Andersen LN, Kohberg M, Juul-Kristensen B, Herborg LG, Søgaard K, Roessler KK. Psychosocial aspects of everyday life with chronic musculoskeletal pain: A systematic review. Scand J Pain. 2014;5(2):131-48.
11. Scott KM, Bruffaerts R, Tsang A, Ormel J, Alonso J, Angermeyer MC, et al. Depression–anxiety relationships with chronic physical conditions: Results from the World Mental Health surveys. Journal of Affective Disorders. 2007;103(1):113-20.
12. Dueñas M, Ojeda B, Salazar A, Mico JA, Failde I. A review of chronic pain impact on patients, their social environment and the health care system. J Pain Res. 2016;9:457-67.
13. Vos T, Allen C, Arora M, Barber RM, Bhutta ZA, Brown A, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. The Lancet. 2016;388(10053):1545-602.
14. Kaiser U, Treede RD, Sabatowski R. Multimodal pain therapy in chronic noncancer pain-gold standard or need for further clarification? Pain. 2017;158(10):1853-9.
15. Shetty A, Delanerolle G, Cavalini H, Deng C, Yang X, Boyd A, et al. A systematic review and network meta-analysis of pharmaceutical interventions used to manage chronic pain. Scientific Reports. 2024;14(1):1621.
16. Marcum ZA, Hanlon JT. Recognizing the Risks of Chronic Nonsteroidal Anti-Inflammatory Drug Use in Older Adults. Ann Longterm Care. 2010;18(9):24-7.

17. Reinecke H, Weber C, Lange K, Simon M, Stein C, Sorgatz H. Analgesic efficacy of opioids in chronic pain: recent meta-analyses. Br J Pharmacol. 2015;172(2):324-33.
18. Ferreira GE, Abdel-Shaheed C, Underwood M, Finnerup NB, Day RO, McLachlan A, et al. Efficacy, safety, and tolerability of antidepressants for pain in adults: overview of systematic reviews. Bmj. 2023;380:e072415.
19. Chen KY, Li RY. Efficacy and safety of different antidepressants and anticonvulsants in central poststroke pain: A network meta-analysis and systematic review. PLoS One. 2022;17(10):e0276012.
20. Benzon HT, Elmofty D, Shankar H, Rana M, Chadwick AL, Shah S, et al. Use of corticosteroids for adult chronic pain interventions: sympathetic and peripheral nerve blocks, trigger point injections - guidelines from the American Society of Regional Anesthesia and Pain Medicine, the American Academy of Pain Medicine, the American Society of Interventional Pain Physicians, and the International Pain and Spine Intervention Society. Reg Anesth Pain Med. 2025.
21. van Middelkoop M, Rubinstein SM, Kuijpers T, Verhagen AP, Ostelo R, Koes BW, et al. A systematic review on the effectiveness of physical and rehabilitation interventions for chronic non-specific low back pain. Eur Spine J. 2011;20(1):19-39.
22. Urits I, Schwartz RH, Orhurhu V, Maganty NV, Reilly BT, Patel PM, et al. A Comprehensive Review of Alternative Therapies for the Management of Chronic Pain Patients: Acupuncture, Tai Chi, Osteopathic Manipulative Medicine, and Chiropractic Care. Advances in Therapy. 2021;38(1):76-89.
23. Turk DC, Wilson HD, Cahana A. Treatment of chronic non-cancer pain. Lancet. 2011;377(9784):2226-35.
24. Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. Prog Neuropsychopharmacol Biol Psychiatry. 2018;87(Pt B):168-82.
25. Williams ACC, Fisher E, Hearn L, Eccleston C. Psychological therapies for the management of chronic pain (excluding headache) in adults. Cochrane Database Syst Rev. 2020;8(8):Cd007407.
26. McCracken LM. Personalized pain management: Is it time for process-based therapy for particular people with chronic pain? Eur J Pain. 2023;27(9):1044-55.
27. Hofmann SG, Asnaani A, Vonk IJ, Sawyer AT, Fang A. The Efficacy of Cognitive Behavioral Therapy: A Review of Meta-analyses. Cognit Ther Res. 2012;36(5):427-40.
28. Curtiss JE, Levine DS, Ander I, Baker AW. Cognitive-Behavioral Treatments for Anxiety and Stress-Related Disorders. Focus (Am Psychiatr Publ). 2021;19(2):184-9.
29. Sturgeon JA. Psychological therapies for the management of chronic pain. Psychol Res Behav Manag. 2014;7:115-24.
30. Martinez-Calderon J, García-Muñoz C, Rufo-Barbero C, Matias-Soto J, Cano-García FJ. Acceptance and Commitment Therapy for Chronic Pain: An Overview of Systematic Reviews with Meta-Analysis of Randomized Clinical Trials. J Pain. 2024;25(3):595-617.
31. Dindo L, Van Liew JR, Arch JJ. Acceptance and Commitment Therapy: A Transdiagnostic Behavioral Intervention for Mental Health and Medical Conditions. Neurotherapeutics. 2017;14(3):546-53.

32. McCracken LM, Vowles KE. Acceptance and commitment therapy and mindfulness for chronic pain: model, process, and progress. Am Psychol. 2014;69(2):178-87.
33. Barlow J, Wright C, Sheasby J, Turner A, Hainsworth J. Self-management approaches for people with chronic conditions: a review. Patient Educ Couns. 2002;48(2):177-87.
34. Philippe TJ, Sikder N, Jackson A, Koblanski ME, Liow E, Pilarinos A, et al. Digital Health Interventions for Delivery of Mental Health Care: Systematic and Comprehensive Meta-Review. JMIR Ment Health. 2022;9(5):e35159.
35. Carlbring P, Andersson G, Cuijpers P, Riper H, Hedman-Lagerlöf E. Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. Cogn Behav Ther. 2018;47(1):1-18.
36. Zandieh S, Abdollahzadeh SM, Sadeghirad B, Wang L, McCabe RE, Yao L, et al. Therapist-guided remote versus in-person cognitive behavioural therapy: a systematic review and meta-analysis of randomized controlled trials. Cmaj. 2024;196(10):E327-e40.
37. Buhrman M, Fredriksson A, Edström G, Shafiei D, Tärnqvist C, Ljótsson B, et al. Guided Internet-delivered cognitive behavioural therapy for chronic pain patients who have residual symptoms after rehabilitation treatment: randomized controlled trial. Eur J Pain. 2013;17(5):753-65.
38. Buhrman M, Nilsson-Ihrfeldt E, Jannert M, Ström L, Andersson G. Guided internet-based cognitive behavioural treatment for chronic back pain reduces pain catastrophizing: a randomized controlled trial. J Rehabil Med. 2011;43(6):500-5.
39. Buhrman M, Skoglund A, Husell J, Bergström K, Gordh T, Hursti T, et al. Guided internet-delivered acceptance and commitment therapy for chronic pain patients: a randomized controlled trial. Behav Res Ther. 2013;51(6):307-15.
40. Buhrman M, Syk M, Burvall O, Hartig T, Gordh T, Andersson G. Individualized Guided Internet-delivered Cognitive-Behavior Therapy for Chronic Pain Patients With Comorbid Depression and Anxiety: A Randomized Controlled Trial. Clin J Pain. 2015;31(6):504-16.
41. Buhrman M, Tillfors M, Holländare F, Lekström E, Håkansson A, Boersma K. Psychological Treatment Targeting Acceptance and Compassion in Patients With Chronic Pain: A Randomized Controlled, Internet-delivered, Treatment Trial. Clin J Pain. 2023;39(12):672-85.
42. Carpenter KM, Stoner SA, Mundt JM, Stoelb B. An online self-help CBT intervention for chronic lower back pain. Clin J Pain. 2012;28(1):14-22.
43. Maathz P, McCracken LM, Eriksson V, Säde F, Aneblom G, Rikner Å, et al. A feasibility trial of online Acceptance and Commitment Therapy for women with provoked vestibulodynia. Scand J Pain. 2023;23(3):476-82.
44. Peters ML, Smeets E, Feijge M, van Breukelen G, Andersson G, Buhrman M, et al. Happy Despite Pain: A Randomized Controlled Trial of an 8-Week Internet-delivered Positive Psychology Intervention for Enhancing Well-being in Patients With Chronic Pain. Clin J Pain. 2017;33(11):962-75.
45. Rickardsson J, Gentili C, Holmström L, Zetterqvist V, Andersson E, Persson J, et al. Internet-delivered acceptance and commitment therapy as microlearning for chronic pain: A randomized controlled trial with 1-year follow-up. Eur J Pain. 2021;25(5):1012-30.

46. Rini C, Porter LS, Somers TJ, McKee DC, DeVellis RF, Smith M, et al. Automated Internet-based pain coping skills training to manage osteoarthritis pain: a randomized controlled trial. Pain. 2015;156(5):837-48.
47. Williams DA, Kuper D, Segar M, Mohan N, Sheth M, Clauw DJ. Internet-enhanced management of fibromyalgia: a randomized controlled trial. Pain. 2010;151(3):694-702.
48. Wilson M, Roll JM, Corbett C, Barbosa-Leiker C. Empowering Patients with Persistent Pain Using an Internet-based Self-Management Program. Pain Manag Nurs. 2015;16(4):503-14.
49. Catella S, Gendreau RM, Kraus AC, Vega N, Rosenbluth MJ, Soefje S, et al. Self-guided digital acceptance and commitment therapy for fibromyalgia management: results of a randomized, active-controlled, phase II pilot clinical trial. J Behav Med. 2024;47(1):27-42.
50. Dear BF, Gandy M, Karin E, Staples LG, Johnston L, Fogliati VJ, et al. The Pain Course: a randomised controlled trial examining an internet-delivered pain management program when provided with different levels of clinician support. Pain. 2015;156(10):1920-35.
51. Dear BF, Karin E, Fogliati R, Dudeney J, Nielssen O, Gandy M, et al. The Pain Course: a randomised controlled trial and economic evaluation of an internet-delivered pain management program. Pain. 2022;163(7):1388-401.
52. Guarino H, Fong C, Marsch LA, Acosta MC, Syckes C, Moore SK, et al. Web-Based Cognitive Behavior Therapy for Chronic Pain Patients with Aberrant Drug-Related Behavior: Outcomes from a Randomized Controlled Trial. Pain Med. 2018;19(12):2423-37.
53. Hedman-Lagerlöf M, Hedman-Lagerlöf E, Axelsson E, Ljótsson B, Engelbrektsson J, Hultkrantz S, et al. Internet-Delivered Exposure Therapy for Fibromyalgia: A Randomized Controlled Trial. Clin J Pain. 2018;34(6):532-42.
54. Hess Engström A, Bohm-Starke N, Kullinger M, Hesselman S, Högberg U, Buhrman M, et al. Internet-based Treatment for Vulvodynia (EMBLA) - A Randomized Controlled Study. J Sex Med. 2022;19(2):319-30.
55. Lam J, Svensson P, Alstergren P. Internet-Based Multimodal Pain Program With Telephone Support for Adults With Chronic Temporomandibular Disorder Pain: Randomized Controlled Pilot Trial. Journal of Medical Internet Research. 2020;22(10):e22326.
56. McKernan LC, McGonigle T, Vandekar SN, Crofford LJ, Williams DA, Clauw DJ, et al. A randomized-controlled pilot trial of telemedicine-delivered cognitive-behavioral therapy tailored for interstitial cystitis/bladder pain syndrome. Pain. 2024;165(8):1748-60.
57. Park SY, Byun SH, Yang BE, Kim D, Kim B, Lee JH, et al. Randomized controlled trial of digital therapeutics for temporomandibular disorder: A pilot study. J Dent. 2024;147:105030.
58. Rutledge T, Atkinson JH, Chircop-Rollick T, D'Andrea J, Garfin S, Patel S, et al. Randomized Controlled Trial of Telephone-delivered Cognitive Behavioral Therapy Versus Supportive Care for Chronic Back Pain. Clin J Pain. 2018;34(4):322-7.
59. Smith J, Faux SG, Gardner T, Hobbs MJ, James MA, Joubert AE, et al. Reboot Online: A Randomized Controlled Trial Comparing an Online Multidisciplinary Pain Management Program with Usual Care for Chronic Pain. Pain Med. 2019;20(12):2385-96.

60. Rosser BA, Fisher E, Janjua S, Eccleston C, Keogh E, Duggan G. Psychological therapies delivered remotely for the management of chronic pain (excluding headache) in adults. Cochrane Database Syst Rev. 2023;8(8):Cd013863.
61. Fisher E, Law E, Palermo TM, Eccleston C. Psychological therapies (remotely delivered) for the management of chronic and recurrent pain in children and adolescents. Cochrane Database Syst Rev. 2015;3(3):Cd011118.
62. Eccleston C, Fisher E, Craig L, Duggan GB, Rosser BA, Keogh E. Psychological therapies (Internet-delivered) for the management of chronic pain in adults. Cochrane Database Syst Rev. 2014;2014(2):Cd010152.
63. Hutton B, Salanti G, Caldwell DM, Chaimani A, Schmid CH, Cameron C, et al. The PRISMA extension statement for reporting of systematic reviews incorporating network meta-analyses of health care interventions: checklist and explanations. Annals of internal medicine. 2015;162(11):777-84.
64. Turk DC, Dworkin RH, Allen RR, Bellamy N, Brandenburg N, Carr DB, et al. Core outcome domains for chronic pain clinical trials: IMMPACT recommendations. Pain. 2003;106(3):337-45.
65. Higgins JP, Altman DG, Gøtzsche PC, Jüni P, Moher D, Oxman AD, et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. Bmj. 2011;343:d5928.
66. Higgins JP, Li T, Deeks JJ. Choosing effect measures and computing estimates of effect. Cochrane handbook for systematic reviews of interventions. 2019:143-76.
67. Chi KY, Li MY, Chen C, Kang E. Ten circumstances and solutions for finding the sample mean and standard deviation for meta-analysis. Syst Rev. 2023;12(1):62.
68. Thorlund K, Walter SD, Johnston BC, Furukawa TA, Guyatt GH. Pooling health-related quality of life outcomes in meta-analysis-a tutorial and review of methods for enhancing interpretability. Res Synth Methods. 2011;2(3):188-203.
69. Dworkin RH, Turk DC, Wyrwich KW, Beaton D, Cleeland CS, Farrar JT, et al. Interpreting the clinical importance of treatment outcomes in chronic pain clinical trials: IMMPACT recommendations. J Pain. 2008;9(2):105-21.
70. Ward MM, Guthrie LC, Alba MI. Clinically important changes in short form 36 health survey scales for use in rheumatoid arthritis clinical trials: the impact of low responsiveness. Arthritis Care Res (Hoboken). 2014;66(12):1783-9.
71. Laucis NC, Hays RD, Bhattacharyya T. Scoring the SF-36 in Orthopaedics: A Brief Guide. J Bone Joint Surg Am. 2015;97(19):1628-34.
72. Kroenke K, Stump TE, Chen CX, Kean J, Bair MJ, Damush TM, et al. Minimally important differences and severity thresholds are estimated for the PROMIS depression scales from three randomized clinical trials. J Affect Disord. 2020;266:100-8.
73. Kroenke K, Baye F, Lourens SG. Comparative Responsiveness and Minimally Important Difference of Common Anxiety Measures. Medical Care. 2019;57(11):890-7.
74. Papaconstantinou E, Cancelliere C, Verville L, Wong JJ, Connell G, Yu H, et al. Effectiveness of non-pharmacological interventions on sleep characteristics among adults with

musculoskeletal pain and a comorbid sleep problem: a systematic review. Chiropr Man Therap. 2021;29(1):23.
75. Cheng LJ, Chen LA, Cheng JY, Herdman M, Luo N. Systematic review reveals that EQ-5D minimally important differences vary with treatment type and may decrease with increasing baseline score. J Clin Epidemiol. 2024;174:111487.
76. Tianqi Y, Silvia M, Chaimani A, editors. NMAstudio: a fully interactive web-application for producing and visualising network meta-analyses. Cochrane Colloquium; 2023.
77. DerSimonian R, Kacker R. Random-effects model for meta-analysis of clinical trials: an update. Contemp Clin Trials. 2007;28(2):105-14.
78. Sadeghirad B, Foroutan F, Zoratti MJ, Busse JW, Brignardello-Petersen R, Guyatt G, et al. Theory and practice of Bayesian and frequentist frameworks for network meta-analysis. BMJ Evid Based Med. 2023;28(3):204-9.
79. Higgins JP, Jackson D, Barrett JK, Lu G, Ades AE, White IR. Consistency and inconsistency in network meta-analysis: concepts and models for multi-arm studies. Res Synth Methods. 2012;3(2):98-110.
80. Dias S, Welton NJ, Caldwell DM, Ades AE. Checking consistency in mixed treatment comparison meta-analysis. Stat Med. 2010;29(7-8):932-44.
81. Busse JW, Bartlett SJ, Dougados M, Johnston BC, Guyatt GH, Kirwan JR, et al. Optimal Strategies for Reporting Pain in Clinical Trials and Systematic Reviews: Recommendations from an OMERACT 12 Workshop. J Rheumatol. 2015;42(10):1962-70.
82. Johnston BC, Alonso-Coello P, Friedrich JO, Mustafa RA, Tikkinen KAO, Neumann I, et al. Do clinicians understand the size of treatment effects? A randomized survey across 8 countries. Cmaj. 2016;188(1):25-32.
83. Egger M, Davey Smith G, Schneider M, Minder C. Bias in meta-analysis detected by a simple, graphical test. Bmj. 1997;315(7109):629-34.
84. Harbord RM, Egger M, Sterne JA. A modified test for small-study effects in meta-analyses of controlled trials with binary endpoints. Stat Med. 2006;25(20):3443-57.
85. Rücker G, Petropoulou M, Schwarzer G. Network meta-analysis of multicomponent interventions. Biometrical Journal. 2020;62(3):808-21.
86. Petropoulou M, Rücker G, Weibel S, Kranke P, Schwarzer G. Model selection for component network meta-analysis in connected and disconnected networks: a simulation study. BMC Medical Research Methodology. 2023;23(1):140.
87. Balduzzi S, Rücker G, Nikolakopoulou A, Papakonstantinou T, Salanti G, Efthimiou O, et al. netmeta: An R Package for Network Meta-Analysis Using Frequentist Methods. Journal of Statistical Software. 2023;106(2):1 - 40.
88. Nikolakopoulou A, Higgins JP, Papakonstantinou T, Chaimani A, Del Giovane C, Egger M, et al. CINeMA: an approach for assessing confidence in the results of a network meta-analysis. PLoS medicine. 2020;17(4):e1003082.
89. Papakonstantinou T, Nikolakopoulou A, Higgins JPT, Egger M, Salanti G. CINeMA: Software for semiautomated assessment of the confidence in the results of network meta-analysis. Campbell Syst Rev. 2020;16(1):e1080.

90. Metelli S, Chaimani A, editors. NMAstudio: a fully interactive web-application for producing and visualising network meta-analyses. SRSM Annual Meeting; 2021.
91. Tashjian RZ, Hung M, Keener JD, Bowen RC, McAllister J, Chen W, et al. Determining the minimal clinically important difference for the American Shoulder and Elbow Surgeons score, Simple Shoulder Test, and visual analog scale (VAS) measuring pain after shoulder arthroplasty. J Shoulder Elbow Surg. 2017;26(1):144-8.
92. Carmody TP, Duncan CL, Huggins J, Solkowitz SN, Lee SK, Reyes N, et al. Telephone-delivered cognitive-behavioral therapy for pain management among older military veterans: a randomized trial. Psychol Serv. 2013;10(3):265-75.
93. Heapy AA, Higgins DM, Goulet JL, LaChappelle KM, Driscoll MA, Czlapinski RA, et al. Interactive Voice Response-Based Self-management for Chronic Back Pain: The COPES Noninferiority Randomized Trial. JAMA Intern Med. 2017;177(6):765-73.
94. Calner T, Nordin C, Eriksson MK, Nyberg L, Gard G, Michaelson P. Effects of a self-guided, web-based activity programme for patients with persistent musculoskeletal pain in primary healthcare: A randomized controlled trial. Eur J Pain. 2017;21(6):1110-20.
95. Gasslander N, Andersson G, Boström F, Brandelius L, Pelling L, Hamrin L, et al. Tailored internet-based cognitive behavioral therapy for individuals with chronic pain and comorbid psychological distress: a randomized controlled trial. Cogn Behav Ther. 2022;51(5):408-34.
96. Braun L, Terhorst Y, Titzler I, Freund J, Thielecke J, Ebert DD, et al. Lessons Learned from an Attempted Pragmatic Randomized Controlled Trial for Improvement of Chronic Pain-Associated Disability in Green Professions: Long-Term Effectiveness of a Guided Online-Based Acceptance and Commitment Therapy (PACT-A). Int J Environ Res Public Health. 2022;19(21).
97. Bennell KL, Nelligan RK, Rini C, Keefe FJ, Kasza J, French S, et al. Effects of internet-based pain coping skills training before home exercise for individuals with hip osteoarthritis (HOPE trial): a randomised controlled trial. Pain. 2018;159(9):1833-42.
98. Baumeister H, Paganini S, Sander LB, Lin J, Schlicker S, Terhorst Y, et al. Effectiveness of a Guided Internet- and Mobile-Based Intervention for Patients with Chronic Back Pain and Depression (WARD-BP): A Multicenter, Pragmatic Randomized Controlled Trial. Psychother Psychosom. 2021;90(4):255-68.
99. Gendreau RM, McCracken LM, Williams DA, Luciano JV, Dai Y, Vega N, et al. Self-guided digital behavioural therapy versus active control for fibromyalgia (PROSPER-FM): a phase 3, multicentre, randomised controlled trial. Lancet. 2024;404(10450):364-74.
100. Ang DC, Chakr R, Mazzuca S, France CR, Steiner J, Stump T. Cognitive-behavioral therapy attenuates nociceptive responding in patients with fibromyalgia: a pilot study. Arthritis Care Res (Hoboken). 2010;62(5):618-23.
101. Bendelin N, Gerdle B, Blom M, Södermark M, Andersson G. Internet-Delivered Acceptance and Commitment Therapy Added to Multimodal Pain Rehabilitation: A Cluster Randomized Controlled Trial. J Clin Med. 2021;10(24).
102. Bostrøm K, Børøsund E, Eide H, Varsi C, Kristjansdottir Ó B, Schreurs KMG, et al. Short-Term Findings From Testing EPIO, a Digital Self-Management Program for People Living With Chronic Pain: Randomized Controlled Trial. J Med Internet Res. 2023;25:e47284.

103. Buhrman M, Fältenhag S, Ström L, Andersson G. Controlled trial of Internet-based treatment with telephone support for chronic back pain. Pain. 2004;111(3):368-77.
104. Buhrman M, Hällström H, Fridén A, Kettis Moden E, Grahn G, Carlfjord M, et al. Guided internet-based acceptance and commitment therapy for provoked vestibulodynia: A randomized controlled trial. European Journal of Pain. 2024;28:1185-201.
105. Burke D, Lennon O, Blake C, Nolan M, Barry S, Smith E, et al. An internet-delivered cognitive behavioural therapy pain management programme for spinal cord injury pain: A randomized controlled trial. Eur J Pain. 2019;23(7):1264-82.
106. Cui D, Janela D, Costa F, Molinos M, Areias AC, Moulder RG, et al. Randomized-controlled trial assessing a digital care program versus conventional physiotherapy for chronic low back pain. NPJ Digit Med. 2023;6(1):121.
107. de Boer MJ, Versteegen GJ, Vermeulen KM, Sanderman R, Struys MM. A randomized controlled trial of an Internet-based cognitive-behavioural intervention for non-specific chronic pain: an effectiveness and cost-effectiveness study. Eur J Pain. 2014;18(10):1440-51.
108. Dear BF, Titov N, Perry KN, Johnston L, Wootton BM, Terides MD, et al. The Pain Course: a randomised controlled trial of a clinician-guided Internet-delivered cognitive behaviour therapy program for managing chronic pain and emotional well-being. Pain. 2013;154(6):942-50.
109. Dowd H, Hogan MJ, McGuire BE, Davis MC, Sarma KM, Fish RA, et al. Comparison of an Online Mindfulness-based Cognitive Therapy Intervention With Online Pain Management Psychoeducation: A Randomized Controlled Study. Clin J Pain. 2015;31(6):517-27.
110. Ferwerda M, van Beugen S, van Middendorp H, Spillekom-van Koulil S, Donders ART, Visser H, et al. A tailored-guided internet-based cognitive-behavioral intervention for patients with rheumatoid arthritis as an adjunct to standard rheumatological care: results of a randomized controlled trial. Pain. 2017;158(5):868-78.
111. Fraenkel L, Buta E, Suter L, Dubreuil M, Levy C, Najem C, et al. Nonsteroidal Anti-inflammatory Drugs vs Cognitive Behavioral Therapy for Arthritis Pain: A Randomized Withdrawal Trial. JAMA Intern Med. 2020;180(9):1194-202.
112. Friesen LN, Hadjistavropoulos HD, Schneider LH, Alberts NM, Titov N, Dear BF. Examination of an Internet-Delivered Cognitive Behavioural Pain Management Course for Adults with Fibromyalgia: A Randomized Controlled Trial. Pain. 2017;158(4):593-604.
113. Herbert MS, Afari N, Liu L, Heppner P, Rutledge T, Williams K, et al. Telehealth Versus In-Person Acceptance and Commitment Therapy for Chronic Pain: A Randomized Noninferiority Trial. J Pain. 2017;18(2):200-11.
114. Lin J, Paganini S, Sander L, Lüking M, Ebert DD, Buhrman M, et al. An Internet-Based Intervention for Chronic Pain. Dtsch Arztebl Int. 2017;114(41):681-8.
115. Maroti D, Lumley MA, Schubiner H, Lilliengren P, Bileviciute-Ljungar I, Ljótsson B, et al. Internet-based emotional awareness and expression therapy for somatic symptom disorder: A randomized controlled trial. J Psychosom Res. 2022;163:111068.
116. Morcillo-Muñoz Y, Sánchez-Guarnido AJ, Calzón-Fernández S, Baena-Parejo I. Multimodal Chronic Pain Therapy for Adults via Smartphone: Randomized Controlled Clinical Trial. J Med Internet Res. 2022;24(5):e36114.

117. Naude C, Skvarc D, Maunick B, Evans S, Romano D, Chesterman S, et al. Acceptance and Commitment Therapy for Adults Living With Inflammatory Bowel Disease and Distress: A Randomized Controlled Trial. American Journal of Gastroenterology. 2024.
118. Nordin CA, Michaelson P, Gard G, Eriksson MK. Effects of the Web Behavior Change Program for Activity and Multimodal Pain Rehabilitation: Randomized Controlled Trial. J Med Internet Res. 2016;18(10):e265.
119. Reilly ED, Kelly MM, Grigorian HL, Waring ME, Quigley KS, Hogan TP, et al. Virtual Coach-Guided Online Acceptance and Commitment Therapy for Chronic Pain: Pilot Feasibility Randomized Controlled Trial. JMIR Form Res. 2024;8:e56437.
120. Romano D, Chesterman S, Fuller-Tyszkiewicz M, Evans S, Dober M, Gearry R, et al. Feasibility, Acceptability, and Preliminary Efficacy of Acceptance Commitment Therapy for Adults Living With Inflammatory Bowel Disease and Distress. Inflammatory Bowel Diseases. 2024;30:911-21.
121. Ruehlman LS, Karoly P, Enders C. A randomized controlled evaluation of an online chronic pain self-management program. Pain. 2012;153:319-30.
122. Rutledge T, Atkinson JH, Holloway R, Chircop-Rollick T, D'Andrea J, Garfin SR, et al. Randomized Controlled Trial of Nurse-Delivered Cognitive-Behavioral Therapy Versus Supportive Psychotherapy Telehealth Interventions for Chronic Back Pain. J Pain. 2018;19(9):1033-9.
123. Sanabria-Mazo JP, Colomer-Carbonell A, Borràs X, Castaño-Asins JR, McCracken LM, Montero-Marin J, et al. Efficacy of Videoconference Group Acceptance and Commitment Therapy (ACT) and Behavioral Activation Therapy for Depression (BATD) for Chronic Low Back Pain (CLBP) Plus Comorbid Depressive Symptoms: A Randomized Controlled Trial (IMPACT Study). J Pain. 2023;24(8):1522-40.
124. Schlicker S, Baumeister H, Buntrock C, Sander L, Paganini S, Lin J, et al. A Web- and Mobile-Based Intervention for Comorbid, Recurrent Depression in Patients With Chronic Back Pain on Sick Leave (Get.Back): Pilot Randomized Controlled Trial on Feasibility, User Satisfaction, and Effectiveness. JMIR Ment Health. 2020;7(4):e16398.
125. Scott W, Chilcot J, Guildford B, Daly-Eichenhardt A, McCracken LM. Feasibility randomized-controlled trial of online Acceptance and Commitment Therapy for patients with complex chronic pain in the United Kingdom. Eur J Pain. 2018.
126. Serrat M, Coll-Omaña M, Albajes K, Solé S, Almirall M, Luciano JV, et al. Efficacy of the FIBROWALK Multicomponent Program Moved to a Virtual Setting for Patients with Fibromyalgia during the COVID-19 Pandemic: A Proof-of-Concept RCT Performed Alongside the State of Alarm in Spain. Int J Environ Res Public Health. 2021;18(19).
127. Simister HD, Tkachuk GA, Shay BL, Vincent N, Pear JJ, Skrabek RQ. Randomized Controlled Trial of Online Acceptance and Commitment Therapy for Fibromyalgia. J Pain. 2018;19(7):741-53.
128. Taguchi K, Numata N, Takanashi R, Takemura R, Yoshida T, Kutsuzawa K, et al. Clinical Effectiveness and Cost-effectiveness of Videoconference-Based Integrated Cognitive Behavioral Therapy for Chronic Pain: Randomized Controlled Trial. J Med Internet Res. 2021;23(11):e30690.

129. Thomson CJ, Pahl H, Giles LV. Randomized controlled trial investigating the effectiveness of a multimodal mobile application for the treatment of chronic pain. Can J Pain. 2024;8(1):2352399.
130. Thorsell J, Finnes A, Dahl J, Lundgren T, Gybrant M, Gordh T. A comparative study of 2 manual-based self-help interventions, acceptance and commitment therapy and applied relaxation, for persons with chronic pain. Clinical Journal of Pain. 2011;27(8):716-23.
131. Trompetter HR, Bohlmeijer ET, Veehof MM, Schreurs KM. Internet-based guided self-help intervention for chronic pain based on acceptance & commitment therapy: A randomized controlled trial. Journal of Behavioral Medicine. 2015;38:66-80.
132. Trudeau KJ, Pujol LA, DasMahapatra P, Wall R, Black RA, Zacharoff K. A randomized controlled trial of an online self-management program for adults with arthritis pain. J Behav Med. 2015;38(3):483-96.
133. Vallejo MA, Ortega J, Rivera J, Comeche MI, Vallejo-Slocker L. Internet versus face-to-face group cognitive-behavioral therapy for fibromyalgia: A randomized control trial. J Psychiatr Res. 2015;68:106-13.
134. Veillette J, Martel ME, Dionne F. A randomized controlled trial evaluating the effectiveness of an acceptance and commitment therapy-based bibliotherapy intervention among adults living with chronic pain. Can J Pain. 2019;3(1):209-25.

Appendices

Appendix 1. Search strategy.

MEDLINE

1. exp Pain/
2. Fibromyalgia/
3. (pain* or fibromyalgia* or neuralgia*).tw.
4. 1 or 2 or 3
5. exp Internet/
6. (Internet or web or blog* or "social media" or online or www or email* or e-mail*).tw.
7. exp Telecommunications/
8. (telemedicine or tele-medicine).tw.
9. (telehealth or tele-health).tw.
10. (ehealth or e-health).tw.
11. (mobile health or mhealth or m-health).tw.
12. ICT.tw.
13. ((inform* or communicat* or interact*) adj6 (computer* or technolog* or software)).tw.
14. ((health* or treat* or therap* or intervention* or assist* or selfmanag* or self-manag*) adj6 (computer* or technolog* or software)).tw.
15. "world wide web".tw.
16. (telephone* or phone* or mobile* or cellphone* or apps or text* or SMS or smartphone*).tw.
17. (virtual reality or augmented reality or VR or AR).tw.
18. ("Interactive voice response" or IVR).tw.
19. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 17 or 18
20. 4 and 19
21. randomized controlled trial.pt.
22. controlled clinical trial.pt.
23. randomized.ab.
24. placebo.ab.
25. drug therapy.fs.
26. randomly.ab.
27. trial.ab.
28. or/21-27
29. exp animals/ not humans.sh.
30. 28 not 29
31. 20 and 30
32. exp Child/ or exp Adolescent/ or exp infant/

33. 31 not 32
34. exp Psychotherapy/
35. exp PSYCHOLOGY/
36. ((behavio#r* adj therapy) or (behavio#r* adj therapies)).tw.
37. ((cognitive adj therapy) or (cognitive adj therapies)).tw.
38. mindfulness.tw.
39. meditat*.tw.
40. psychotherap*.tw.
41. (psychological adj treatment*).tw.
42. ((psychological adj therapy) or (psychological adj therapies)).tw.
43. 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42
44. 33 and 43

Embase

1 exp Pain/
2 Fibromyalgia/
3 (pain* or fibromyalgia* or neuralgia*).tw.
4 1 or 2 or 3
5 exp Internet/
6 (Internet or web or blog* or "social media" or online or www or email* or e-mail*).tw.
7 exp Telecommunications/
8 (telemedicine or tele-medicine).tw.
9 (telehealth or tele-health).tw.
10 (ehealth or e-health).tw.
11 (mobile health or mhealth or m-health).tw.
12 ICT.tw.
13 ((inform* or communicat* or interact*) adj6 (computer* or technolog* or soNware)).tw.
14 ((health* or treat* or therap* or intervention* or assist* or selfmanag* or self-manag*) adj6 (computer* or technolog* or soNware)).tw.
15 "world wide web".tw.
16 (telephone* or phone* or mobile* or cellphone* or apps or text* or SMS or smartphone*).tw.
17 (virtual reality or augmented reality or VR or AR).tw.
18 ("Interactive voice response" or IVR).tw.
19 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 16 or 17 or 18
20 4 and 19
21 exp Psychotherapy/
22 exp PSYCHOLOGY/
23 ((behavio#r* adj therapy) or (behavio#r* adj therapies)).tw.
24 ((cognitive adj therapy) or (cognitive adj therapies)).tw.

25 mindfulness.tw.
26 meditat*.tw.
27 meditat*.tw.
28 psychotherap*.tw.
29 (psychological adj treatment*).tw.
30 ((psychological adj therapy) or (psychological adj therapies)).tw.
31 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30
32 20 and 31
33 exp Child/ or exp Adolescent/ or exp infant/
34 32 not 33
35 random$.tw.
36 factorial$.tw
37 crossover$.tw.
38 cross over$.tw.
39 cross-over$.tw.
40 placebo$.tw.
41 (doubl$ adj blind$).tw.
42 (singl$ adj blind$).tw.
43 assign$.tw.
44 allocat$.tw.
45 volunteer$.tw.
46 Crossover Procedure/
47 double-blind procedure.tw.
48 Randomized Controlled Trial/
49 Single Blind Procedure/
50 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49
51 (animal/ or nonhuman/) not human/
52 50 not 51
53 34 and 52

PsycINFO

1. exp Pain/
2. Fibromyalgia/
3. (pain* or fibromyalgia* or neuralgia*).tw.
4. 1 or 2 or 3
5. exp Internet/
6. (Internet or web or blog* or "social media" or online or www or email* or e-mail*).tw.
7. exp Telecommunications/
8. (telemedicine or tele-medicine).tw.

9. (telehealth or tele-health).tw.
10. (ehealth or e-health).tw.
11. (mobile health or mhealth or m-health).tw.
12. ICT.tw.
13. ((inform* or communicat* or interact*) adj6 (computer* or technolog* or software)).tw.
14. ((health* or treat* or therap* or intervention* or assist* or selfmanag* or self-manag*) adj6 (computer* or technolog* or software)).tw.
15. "world wide web".tw.
16. (telephone* or phone* or mobile* or cellphone* or apps or text* or SMS or smartphone*).tw.
17. (virtual reality or augmented reality or VR or AR).tw.
18. ("Interactive voice response" or IVR).tw.
19. 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 17 or 18
20. 4 and 19
21. randomized controlled trial.tw.
22. controlled clinical trial.tw.
23. randomized.ab.
24. placebo.ab.
25. randomly.ab.
26. trial.ab.
27. exp animals/ not humans.sh.
28. exp Psychotherapy/
29. exp PSYCHOLOGY/
30. ((behavio#r* adj therapy) or (behavio#r* adj therapies)).tw.
31. ((cognitive adj therapy) or (cognitive adj therapies)).tw.
32. mindfulness.tw.
33. meditat*.tw.
34. psychotherap*.tw.
35. (psychological adj treatment*).tw.
36. ((psychological adj therapy) or (psychological adj therapies)).tw.
37. 21 or 22 or 23 or 24 or 25 or 26
38. 37 not 27
39. 20 and 38
40. (Child or Adolescent or infant).mp.
41. 39 not 40
42. 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36
43. 41 and 42

CINAHL (EBSCO)

S34 S26 AND S33
S33 S27 OR S28 OR S29 OR S30 OR S31 OR S32
S32 AB psychological treatment or intervention or therapy or psychotherapy
S31 AB psychotherap*
S30 AB meditat*
S29 (MH "Mindfulness")
S28 (MH "Behavior Therapy+") OR (MH "Cognitive Therapy+")
S27 DE "Psychotherapy" OR DE "Adlerian Psychotherapy" OR DE "Adolescent Psychotherapy" OR DE "AKirmative Therapy" OR DE "Analytical Psychotherapy" OR DE "Autogenic Training" OR DE "Brief Psychotherapy" OR DE "Brief Relational Therapy" OR DE "Child Psychotherapy" OR DE "Client Centered Therapy" OR DE "Conversion Therapy" OR DE "Couples Therapy" OR DE "Eclectic Psychotherapy" OR DE "Emotion Focused Therapy" OR DE "Existential Therapy" OR DE "Experiential Psychotherapy" OR DE "Expressive Psychotherapy" OR DE "Eye Movement Desensitization Therapy" OR DE "Feminist Therapy" OR DE "Geriatric Psychotherapy" OR DE "Gestalt Therapy" OR DE "Group Psychotherapy" OR DE "Guided Imagery" OR DE "Humanistic Psychotherapy" OR DE "Hypnotherapy" OR DE "Individual Psychotherapy" OR DE "Insight Therapy" OR DE "Integrative Psychotherapy" OR DE "Interpersonal Psychotherapy" OR DE "Logotherapy" OR DE "Narrative Therapy" OR DE "Network Therapy" OR DE "Persuasion Therapy" OR DE "Primal Therapy" OR DE "Psychoanalysis" OR DE "Psychodrama" OR DE "Psychodynamic Psychotherapy" OR DE "Psychotherapeutic Counseling" OR DE "Psychotherapeutic Techniques" OR DE "Rational Emotive Behavior Therapy" OR DE "Reality Therapy" OR DE "Relationship Therapy" OR DE "Solution Focused Therapy" OR DE "Strategic Therapy" OR DE "Supportive Psychotherapy" OR DE "Transactional Analysis"
S26 S4 AND S17 AND S25
S25 S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24
S24 AB "Followup Studies"
S23 AB "Placebo"
S22 AB "Treatment Effectiveness Evaluation"
S21 DE "Treatment Outcomes" OR DE "Psychotherapeutic Outcomes" OR DE "Side EKects (Treatment)" OR DE "Treatment Compliance" OR DE "Treatment Duration" OR DE "Treatment Refusal" OR DE "Treatment Termination" OR DE "Treatment Withholding"
S20 AB placebo* OR random* OR "comparative stud*"
S19 AB clinical N3 trial* OR research N3 design OR evaluat* N3 stud* OR prospectiv* N3 stud*
S18 AB (singl* OR doubl* OR trebl* OR tripl*) N3 (blind* OR mask*)
S17 S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 OR S16
S16 (MH "Interactive Voice Response Systems")
S15 AB (virtual reality or augmented reality or VR or AR)

S14 AB (telephone* or phone* or mobile* or cellphone* or apps or text* or SMS or smartphone*)
S13 (MH "World Wide Web")
S12 AB ((health* or treat* or therap* or intervention* or assist* or selfmanag* or self-manag*) N6 (computer* or technolog* or software))
S11 AB ((inform* or communicat* or interact*) N6 (computer* or technolog* or software))
S10 (MH "Information Technology")
S9 (MM "Telehealth+")
S8 (MH "Telemedicine")
S7 DE "Teleconsultation" OR DE "Telemedicine"
S6 (Internet or web or blog* or "social media" or online or www or email* or e-mail*) S5 DE
S5 DE "Internet" OR DE "Blog"
S4 S1 OR S2 OR S3
S3 (MH "Chronic Pain")
S2 DE "Fibromyalgia"
S1 DE "Pain" OR DE "Acute Pain" OR DE "Aphagia" OR DE "Back Pain" OR DE "Chronic Pain" OR DE "Headache" OR DE "Myofascial Pain" OR DE "Neuralgia" OR DE "Neuropathic Pain" OR DE "Somatoform Pain Disorder"

Cochrane (CENTRAL)

#1 MeSH descriptor: [Pain] explode all trees
#2 MeSH descriptor: [Fibromyalgia] this term only
#3 ((pain* or fibromyalgia* or neuralgia*)):ti,ab,kw (Word variations have been searched)
#4 #1 or #2 or #3
#5 MeSH descriptor: [Internet] explode all trees
#6 ((Internet or web or blog* or "social media" or online or www or email* or e-mail*)):ti,ab,kw (Word variations have been searched)
#7 MeSH descriptor: [Telecommunications] explode all trees
#8 ((telemedicine or tele-medicine)):ti,ab,kw (Word variations have been searched)
#9 ((telehealth or tele-health)):ti,ab,kw (Word variations have been searched)
#10 ((ehealth or e-health)):ti,ab,kw (Word variations have been searched)
#11 ((mobile health or mhealth or m-health)):ti,ab,kw (Word variations have been searched)
#12 (ICT):ti,ab,kw (Word variations have been searched)
#13 (((inform* or communicat* or interact*) Near (computer* or technolog* or software))):ti,ab,kw (Word variations have been searched)
#14 (((health* or treat* or therap* or intervention* or assist* or selfmanag* or self-manag*) near (computer* or technolog* or software))):ti,ab,kw (Word variations have been searched)
#15 ("world wide web"):ti,ab,kw (Word variations have been searched)

#16 ((telephone* or phone* or mobile* or cellphone* or apps or text* or SMS or smartphone*)):ti,ab,kw (Word variations have been searched)
#17 ((virtual reality or augmented reality or VR or AR)):ti,ab,kw (Word variations have been searched)
#18 (("Interactive voice response" or IVR)):ti,ab,kw (Word variations have been searched)
#19 #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
#20 MeSH descriptor: [Psychotherapy] explode all trees
#21 MeSH descriptor: [Psychology] explode all trees
#22 (((behavio#r* next therapy) or (behavio#r* next therapies))):ti,ab,kw (Word variations have been searched)
#23 (((cognitive next therapy) or (cognitive next therapies))):ti,ab,kw (Word variations have been searched)
#24 (mindfulness):ti,ab,kw (Word variations have been searched)
#25 (meditat*):ti,ab,kw (Word variations have been searched)
#26 (psychotherap*):ti,ab,kw (Word variations have been searched)
#27 ((psychological next treatment*)):ti,ab,kw (Word variations have been searched)
#28 (((psychological next therapy) or (psychological next therapies))):ti,ab,kw (Word variations have been searched)
#29 #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28
#30 MeSH descriptor: [Child] explode all trees
#31 MeSH descriptor: [Adolescent] explode all trees
#32 MeSH descriptor: [Infant Behavior] explode all trees
#33 #30 or #31 or #32
#34 #4 and #19 and #29
#35 #34 not #33

Appendix 2. SUCRA values and mean ranks for pain intensity at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	19.8	0.0	9.0
ACT	83.0	15.0	2.7
CBT	37.5	0.4	7.3
Education	54.2	0.2	5.6
r-ACT	70.6	0.1	3.9
r-CBT	49.6	0.0	6.0
r-CBT + r-ACT + mindfulness	26.0	0.0	8.4
r-CBT + education + mindfulness	96.1	78.3	1.4
r-CBT + education + mindfulness + exercise	66.6	4.7	4.3
r-CBT + mindfulness	11.7	0.0	9.8
Mindfulness	34.8	1.2	7.5

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 3. SUCRA values and mean ranks for pain intensity at first follow-up (up to 6 months post-treatment).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	30.0	0.0	7.3
ACT	73.4	18.6	3.4
CBT	16.2	0.1	8.5
Education	22.8	0.0	8.0
r-ACT	73.7	3.0	3.4
r-CBT	50.0	0.0	5.5
r-CBT + education + mindfulness	65.1	19.6	4.1
r-CBT + education + mindfulness + exercise	81.8	33.0	2.6
r-CBT + mindfulness	13.5	0.4	8.8
Mindfulness	73.5	25.3	3.4

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 4. SUCRA values and mean ranks for pain intensity at second follow-up (more than 6 months).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	49.0	2.4	3.5
CBT	32.5	7.9	4.4
Education	56.9	10.9	3.2
r-ACT	91.4	67.8	1.4
r-CBT	31.0	1.0	4.5
Mindfulness	39.2	10.0	4.0

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 5. SUCRA values and mean ranks for physical function at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Uusal care	17.6	0.0	8.4
ACT	53.9	3.4	5.1
CBT	27.2	0.8	7.6
Education	43.8	0.2	6.1
r-ACT	70.9	1.7	3.6
r-CBT	45.6	0.0	5.9
r-CBT + r-ACT + mindfulness	56.8	2.2	4.9
r-CBT + education + mindfulness	79.9	27.7	2.8
r-CBT + education + mindfulness + exercise	92.3	63.4	1.7
Mindfulness	11.9	0.5	8.9

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 6. SUCRA values and mean ranks for physical function at first follow-up (up to 6 months post-treatment).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	44.1	0.1	4.9
ACT	69.2	18.2	3.2
CBT	10.0	0.3	7.3
Education	34.3	0.3	5.6
r-ACT	87.6	36.7	1.9
r-CBT	41.2	0.3	5.1
r-CBT + education + mindfulness + exercise	75.2	35.5	2.7
Mindfulness	38.4	8.6	5.3

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 7. SUCRA values and mean ranks for physical function at second follow-up (more than 6 months).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	58.1	18.8	3.1
CBT	19.4	1.4	5.0
Education	36.0	0.6	4.2
r-ACT	84.3	43.7	1.8
r-CBT	37.0	0.7	4.1
Mindfulness	65.2	34.8	2.7

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 8. SUCRA values and mean ranks for mental health at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	28.6	0.0	5.3
ACT	64.9	23.3	3.1
CBT	13.3	0.9	6.2
Education	52.1	8.1	3.9
r-ACT	60.4	3.7	3.4
r-CBT	43.5	1.3	4.4
r-CBT + r-ACT + mindfulness	87.2	62.7	1.8

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 9. SUCRA values and mean ranks for mental health at first follow-up (up to 6 months post-treatment).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	51.5	5.4	3.4
ACT	46.8	14.7	3.7
CBT	37.5	11.4	4.1
Education	31.3	2.8	4.4
r-ACT	80.6	45.6	2.0
r-CBT	52.3	20.2	3.4

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 10. SUCRA values and mean ranks for quality of life at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	0.7	0.0	4.0
Education	58.9	23.7	2.2
r-ACT	77.6	43.4	1.7
r-CBT	62.8	32.9	2.1

r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 11. SUCRA values and mean ranks for depression at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	12.3	0.0	8.9
ACT	70.1	36.9	3.7
CBT	76.5	25.3	3.1
Education	67.9	9.3	3.9
r-ACT	59.2	1.0	4.7
r-CBT	61.3	1.8	4.5
r-CBT+ r-ACT+ mindfulness	44.3	7.1	6.0
r-CBT+ education + mindfulness	48.3	6.9	5.7
r-CBT+ education + mindfulness + exercise	37.3	8.6	6.6
Mindfulness	22.8	3.0	7.9

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 12. SUCRA values and mean ranks for depression at first follow-up (up to 6 months post-treatment).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	22.5	0.0	7.2
ACT	45.6	11.5	5.3
CBT	39.4	2.6	5.8
Education	38.3	0.0	5.9
r-ACT	85.4	28.7	2.2
r-CBT	62.3	1.7	4.0
r-CBT+ education + mindfulness	61.5	24.9	4.1
r-CBT+ education + mindfulness + exercise	40.5	10.5	5.8
Mindfulness	54.6	20.1	4.6

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 13. SUCRA values and mean ranks for depression at second follow-up (more than 6 months).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	8.5	0.1	5.6
CBT	39.0	7.7	4.1
Education	56.8	10.5	3.2
r-ACT	74.9	26.9	2.3
r-CBT	50.7	7.4	3.5
Mindfulness	70.0	47.5	2.5

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 14. SUCRA values and mean ranks for anxiety at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	29.1	0.0	6.0
ACT	82.1	54.4	2.3
Education	31.5	0.3	5.8
r-ACT	65.3	1.5	3.4
r-CBT	85.2	30.3	2.0
r-CBT+ r-ACT+ mindfulness	34.2	3.4	5.6
r-CBT+ education + mindfulness	41.9	4.6	5.1
Mindfulness	30.8	5.5	5.8

ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 15. SUCRA values and mean ranks for anxiety at first follow-up (up to 6 months post-treatment).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	19.5	0.0	5.8
ACT	85.8	60.9	1.9
Education	23.8	0.1	5.6
r-ACT	64.0	3.4	3.2
r-CBT	61.3	5.3	3.3
r-CBT+ education + mindfulness	39.0	9.3	4.7
Mindfulness	56.5	20.9	3.6

ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 16. SUCRA values and mean ranks for anxiety at second follow-up (more than 6 months).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	26.8	0.4	3.9
Education	15.9	0.2	4.4
r-ACT	88.7	61.7	1.5
r-CBT	53.2	13.7	2.9
Mindfulness	65.4	23.9	2.4

r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 17. SUCRA values and mean ranks for sleep quality at post-treatment.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	17.3	0.0	6.0
ACT	74.2	27.3	2.6
CBT	20.8	1.1	5.8
Education	87.3	60.2	1.8
r-ACT	72.8	6.8	2.6
r-CBT	47.8	1.2	4.1
r-CBT+ education + mindfulness	29.9	3.4	5.2

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 18. SUCRA values and mean ranks for sleep quality at first follow-up (up to 6 months post-treatment).

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	15.0	0.0	6.1
ACT	76.4	35.6	2.4
CBT	25.8	1.5	5.5
Education	68.1	26.3	2.9
r-ACT	74.4	16.2	2.5
r-CBT	33.2	0.5	5.0
r-CBT+ education + mindfulness	57.2	19.9	3.6

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 19. SUCRA values and mean ranks for dropout rate.

Treatment	SUCRA (%)	Probability of Being Best (%)	Mean Rank
Usual care	83.3	10.2	2.7
ACT	87.4	55.6	2.3
CBT	40.6	1.8	6.9
Education	50.0	0.4	6.0
r-ACT	40.0	0.0	7.0
r-CBT	47.1	0.0	6.3
r-CBT+ r-ACT+ mindfulness	30.7	1.8	7.9
r-CBT+ education + mindfulness	19.7	0.6	9.0
r-CBT + education + mindfulness + exercise	66.2	20.6	4.4
r-CBT + mindfulness	41.8	5.1	6.8
Mindfulness	43.2	3.7	6.7

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 20. Results of the confidence in NMA (CINeMA) assessment for pain intensity at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concern	No concerns	No concerns	Low
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-ACT	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	3	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	Some concerns	Low
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	14	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	28	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + r-ACT + mindfulness vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + r-	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT + mindfulness								
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + education +mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT +r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT +	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

education + mindfulness								
r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 21. Results of the confidence in NMA (CINeMA) assessment for pain intensity at first follow-up (up to 6 months post-treatment).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	3	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Usual care	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	12	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 22. Results of the confidence in NMA (CINeMA) assessment for pain intensity at second follow-up (more than 6 months).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
CBT vs. r-CBT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Usual care	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 23. Results of the confidence in NMA (CINeMA) assessment for physical function at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	3	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	8	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	19	Some concerns	Some concerns [a]	No concerns	No concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness exe	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness exe	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT +	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

education + mindfulness								
Education vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness exe	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness exe	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

r-CBT + r-ACT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + education + mindfulness exe	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

[a] Results of the Egger's test for small-study effects (P = 0.023).
ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 24. Results of the confidence in NMA (CINeMA) assessment for physical function at first follow-up (up to 6 months post-treatment).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	3	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Usual care	7	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	Some concerns	No concerns	Very low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 25. Results of the confidence in NMA (CINeMA) assessment for physical function at second follow-up (more than 6 months).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
CBT vs. r-CBT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 26. Results of the confidence in NMA (CINeMA) assessment for mental health at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Usual care	3	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + r-ACT + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 27. Results of the confidence in NMA (CINeMA) assessment for mental health at first follow-up (up to 6 months post-treatment).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-ACT vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 28. Results of the confidence in NMA (CINeMA) assessment for quality of life at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
Education vs. r-ACT	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	10	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 29. Results of the confidence in NMA (CINeMA) assessment for depression at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	13	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	25	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + r-ACT + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Usual care	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT +	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

education + mindfulness								
Education vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + Mindfulness vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

r-CBT + r-ACT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 30. Results of the confidence in NMA (CINeMA) assessment for depression at first follow-up (up to 6 months post-treatment).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-ACT	3	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	10	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education +	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

mindfulness + exercise								
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 31. Results of the confidence in NMA (CINeMA) assessment for depression at second follow-up (more than 6 months).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
CBT vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 32. Results of the confidence in NMA (CINeMA) assessment for anxiety at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	8	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	22	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + r-ACT + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

Education vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + r-ACT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT: acceptance and commitment therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 33. Results of the confidence in NMA (CINeMA) assessment for anxiety at first follow-up (up to 6 months post-treatment).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-ACT	3	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Usual care	2	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	8	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 34. Results of the confidence in NMA (CINeMA) assessment for anxiety at second follow-up (more than 6 months).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT vs. Usual care	2	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low

r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 35. Results of the confidence in NMA (CINeMA) assessment for sleep quality at post-treatment.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. Usual care	4	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. Usual care	5	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

CBT vs. Usual care	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
Education vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	No concerns	No concerns	No concerns	Moderate

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 36. Results of the confidence in NMA (CINeMA) assessment for sleep quality at first follow-up (up to 6 months post-treatment).

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. r-CBT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT + education + mindfulness vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low

CBT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
Education vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	--	--	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.

Appendix 37. Results of the confidence in NMA (CINeMA) assessment for dropout rate.

Comparison	Number of studies	Within-study bias	Reporting bias	Indirectness	Imprecision	Heterogeneity	Incoherence	Confidence rating
ACT vs. r-ACT	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT	3	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-ACT	4	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT	3	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Mindfulness	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. Usual care	15	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-CBT vs. Usual care	29	Some concerns	Low risk	No concerns	No concerns	Some concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. Usual care	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Usual care	2	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. Usual care	1	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + r-ACT +	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

mindfulness								
ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
ACT vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Education	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-ACT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. r-CBT +	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

education + mindfulness								
Education vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Education vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-ACT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + r-ACT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + r-ACT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + education + mindfulness + exercise	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. r-CBT + mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + education + mindfulness + exercise vs. r-CBT +	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

mindfulness								
r-CBT + education + mindfulness + exercise vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + mindfulness vs. Mindfulness	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
r-CBT + mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low
Mindfulness vs. Usual care	0	Some concerns	Low risk	No concerns	Some concerns	No concerns	No concerns	Low

ACT: acceptance and commitment therapy; CBT: cognitive behavioral therapy; r-ACT: remotely delivered acceptance and commitment therapy; r-CBT: remotely delivered cognitive behavioral therapy.