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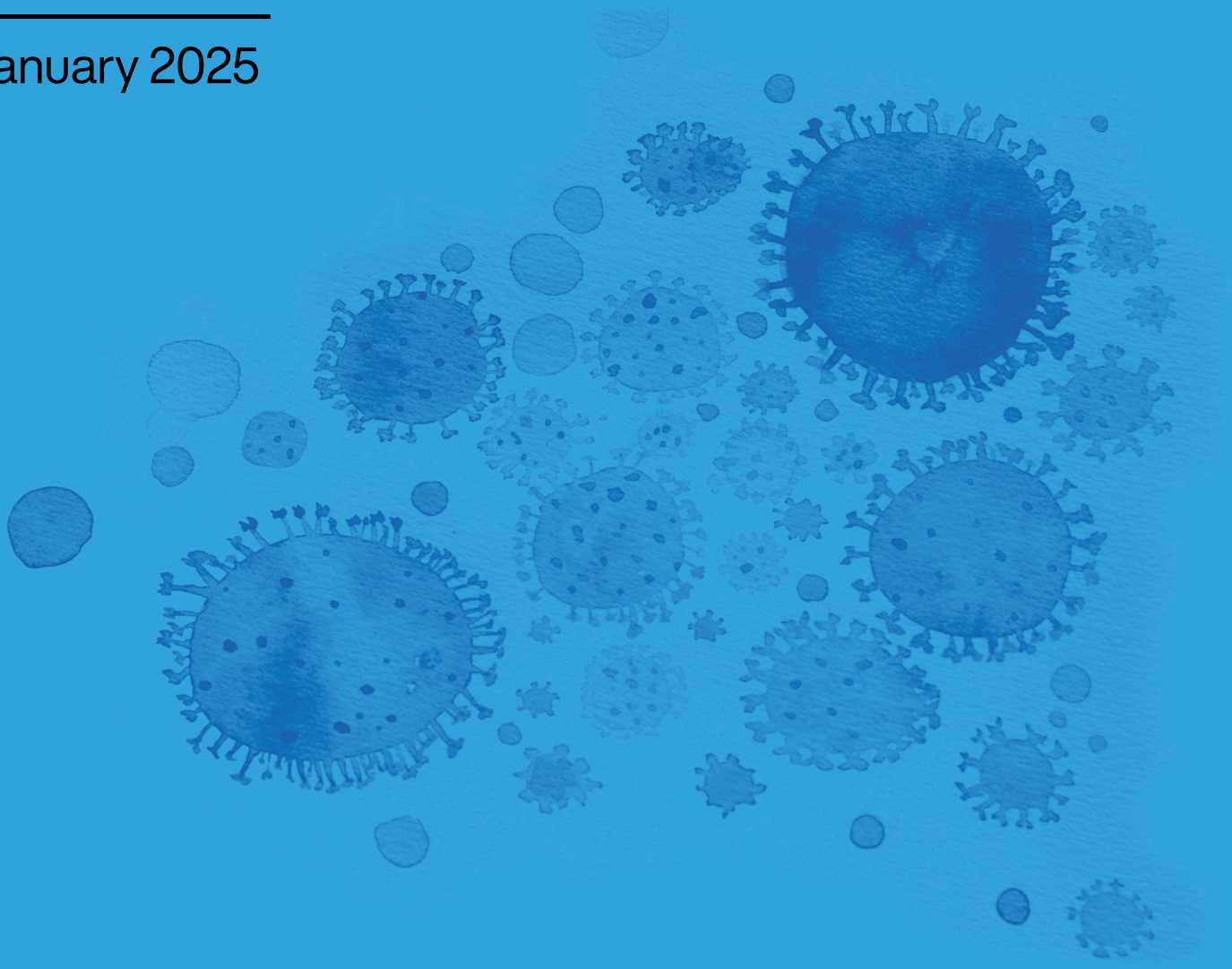
Treatment and rehabilitation of Long COVID

A scope of the literature: update

January 2025



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Treatment and rehabilitation of Long COVID: A scope of the literature. Update January 2025

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Summary

- We identified 23 randomised controlled trials published between September and December 2024 that were focused on Long COVID treatment or rehabilitation. Across our eleven reports produced to date, we have identified and assessed 179 trials published between January 2022 and December 2024.
- Twelve of the 23 trials focused on generalised or multiple symptoms of Long COVID, with one study assessing the cost-effectiveness of a rehabilitation programme. Four trials focused primarily on fatigue, and another evaluated a treatment for fatigue and/or cognitive dysfunction. Two other trials had a primary focus on treating cognitive dysfunction. Three trials focused on respiratory or cardiovascular function or physical fitness, one of which evaluated a treatment for both dyspnoea and fatigue. One trial focused on individuals with post COVID depression and anxiety.
- Two trials were rated positively for 12 out of the 13 quality criteria that we assessed and three met 11 criteria. The remaining 18 trials gained a positive rating for between four and ten criteria.

Introduction

This is the eleventh report in an ongoing series of quarterly evidence scans requested by NHS England and the Department of Health and Social Care. It was conducted to identify and quality assess randomised controlled trials (RCTs) evaluating treatment or rehabilitation for Long COVID published in the three-month period between September and December 2024.

Method

Identification of studies

We searched the Cochrane Central Register of Controlled Trials (CENTRAL) using a range of key terms that have been used in the literature to describe symptoms and effects persisting beyond the acute stage of COVID-19 infection. Searches of MEDLINE, Embase, PsycINFO and CINAHL were also conducted to identify any trials that had not been incorporated into CENTRAL. We translated the CENTRAL search strategy for use in each database and used study design search filters to restrict retrieval to randomised controlled trials.

Searches were limited to studies added to the databases or published between 2022 and 2024, and no language restrictions were applied. Preprints were removed from the searches in MEDLINE and Embase. Due to the rapid nature of the project, the database searches were designed to balance the need to retrieve as many relevant trials as possible against the limited time available for screening. Records were downloaded into EndNote and deduplicated against the search results from previous updates. Full search strategies can be found in Appendix 1 (page 22).

Study selection

Studies were screened for inclusion against the following criteria:

Population - patients with Long COVID, which we conceptualised broadly as experiencing at least one symptom or effect that persists or develops after acute COVID-19 infection. No restrictions were placed on the socio-demographic characteristics of participants or COVID

severity. We also did not apply criteria relating to the time period after acute infection owing to variation in how Long COVID has been defined in the literature.

Interventions - any intervention aimed at treating or rehabilitating patients with Long COVID. This could include, but was not limited to, medication, supplements, and physical therapy. Interventions that had a primary focus on general rehabilitation from COVID-19 following hospitalisation or severe infection were excluded.

Outcomes – primary outcomes related to the effectiveness, cost-effectiveness, safety or side effects of interventions. Studies could also report outcomes related to the implementation of interventions. We excluded studies that only had a primary focus on intermediate outcomes such as blood biomarkers.

Study design - prospective trials with random allocation of participants to intervention and comparator groups. When designed and conducted to a high standard, a randomised controlled trial is often the most robust type of primary study design for investigating intervention effectiveness.[1] We excluded studies that were solely a post hoc or secondary analysis of a RCT.

Publication type and status - any publication type, except pre-prints and conference abstracts, which reports findings from a RCT (e.g., full papers, research letters, brief reports etc).

Quality assessment

Each study was appraised according to the Joanna Briggs Institute (JBI) Checklist for Randomized Controlled Trials.[2] In contrast to the Cochrane Risk of Bias Tool,[3] the JBI checklist does not require an assessment of bias for specific outcomes. It provides instead a general appraisal of each trial as a whole, which was needed in this piece of work as we were not seeking to extract and synthesise outcome data. Assessments were conducted by one reviewer and checked by another. The appraisal identified potential sources of bias and threats to the validity and reliability of study findings. The full checklist is provided in Appendix 2 (page 30).

Key findings

We screened 377 records and included 23 RCTs that had been published since September 2024.[4-26] The most trials we included in any of our previous ten reports was 21 (January 2024).[27] The flow of studies through the current update is shown in Appendix 3 (page 31). Table 1 (page 7) presents the aim(s) and key characteristics of the 23 trials.

Interventions

Twelve of the 23 trials focused on individuals experiencing generalised or multiple symptoms of Long COVID.[4, 5, 9, 10, 13, 17, 18, 20-22, 24, 26] One study assessed the cost-effectiveness of an online physical and mental health rehabilitation programme.[20] Based on a UK trial (REGAIN), this is the first study reporting the cost-effectiveness of a treatment or rehabilitation programme for people with Long COVID that we have identified. The clinical effectiveness findings from the REGAIN trial were reported by McGregor et al.,[28] which we included in our April 2024 report.[29] Another one of the 12 trials in the current update was a UK-based trial that focused primarily on assessing the feasibility of an online personalised health behaviour support programme, but some findings of clinical effectiveness were reported as secondary outcomes.[4]

Four of the 12 trials evaluated the clinical effectiveness of programmes comprising breathing training, aerobic exercise and/or strength/resistance training.[5, 9, 10, 21] One of the 12 trials evaluated a Pilates-based intervention[13] and another assessed an online multimodal rehabilitation program, which provided participants with exercises and therapeutic recommendations.[17] Another trial investigated transcutaneous electrical nerve stimulation (TENS) for individuals with fibromyalgia-like symptoms, specifically, persistent musculoskeletal pain, fatigue, and/or weakness in one or more body parts.[26] The other three trials evaluated: a supplement of combined plant extracts (lime, bamboo grass, cannabis leaves, galangal roots, and black pepper)(Clears-belong Plus®);[18] individualised homeopathic medicinal products;[22] and combined drug (succinic acid complex with trimethylhydrazinium) and systemic ozone therapy.[24]

Four of the 23 trials focused on treatments for individuals who primarily had problems with post COVID fatigue.[6, 8, 16, 23] One trial evaluated beetroot juice oral supplementation,[6] and one compared online and face-to-face Mat Pilates.[8] Another trial evaluated auriculotherapy, which is a form of acupressure that involves stimulating specific parts of the ear.[16] The fourth trial investigated the effects of a synbiotic supplement (containing probiotics and prebiotics) and required participants to have fatigue plus one other persistent COVID-19 symptom.[23] One of the 23 trials assessed the effects of lithium aspartate for individuals with post COVID fatigue and/or cognitive dysfunction.[12] Two other trials reported on treatments for persistent cognitive dysfunction with one evaluating portable oxygen therapy; [11] and the other a videogame-based digital therapeutic intervention (AKL-T01, EndeavorRx®).[25]

Three trials assessed treatments for individuals who primarily had problems with respiratory or cardiovascular function or physical fitness,[7, 14, 19] one of which also focused on treating both dyspnoea and fatigue.[19] One trial evaluated the effectiveness of exercise-based cardiopulmonary rehabilitation[14] and another assessed pulmonary rehabilitation in combination with progressive muscular relaxation.[19] The third trial investigated the effect of sulphur thermal water inhalation therapy.[7] One of the 24 trials compared mindfulness-based cognitive therapy and Beck's cognitive therapy for treating post COVID depression and anxiety.[15]

Ten of the 23 trials in the current update (43%) evaluated interventions that incorporated an exercise component, strength training and/or breathing training including Pilates. In our previous four reports approximately a third (31%) to a half (53%) of included trials have focused on these types of intervention. This is the first report for which we did not identify any recently published trials of interventions for olfactory dysfunction.

Participants

Thirteen trials recruited participants who had experienced persistent effects for at least four weeks after the onset of COVID symptoms or diagnosis.[4-6, 8-11, 13, 14, 16, 18, 21, 22] In ten of the 13 trials, participants had persistent effects for at least 12 weeks after symptom onset or diagnosis.[4-6, 8, 10, 11, 13, 14, 21, 22] Another trial focused on individuals who tested positive for COVID-19 within the previous three months.[23]

Participants in three trials reported persistent symptoms for at least, four weeks[25] or 12 weeks, after COVID-19 infection.[17, 19] Participants in another trial reported persistent symptoms for between three to 12 months after COVID-19 infection.[24] Four other trials recruited individuals at least four weeks,[12] eight weeks,[15] 12 weeks,[20] or 16 weeks[7] after recovery or hospital

discharge. The remaining trial recruited individuals who had persistent symptoms that were not present before COVID-19 infection.[26]

Countries

Three trials were conducted in the USA;[12, 25, 26] and two trials in Brazil;[8, 13] Iran;[15, 16] Italy;[6, 7] Spain;[17, 21] and the UK.[4, 20] One trial was conducted in Canada;[11] China;[5] Crimea;[24] Ecuador;[10] India;[22] Indonesia;[9] Romania;[19] Serbia;[23] Thailand;[18] and Tunisia.[14]

Trial quality

Assessments of the trials against the JBI criteria are provided in Table 2 (page 17). Our assessment of the cost-effectiveness study by Nwankwo et al.[20] was supplemented using information about trial procedures from McGregor et al.,[28] which was the primary paper reporting on the REGAIN trial.

None of the trials were assessed as having a low risk of bias for all 13 appraisal criteria. We rated two trials positively for 12 out of the 13 criteria.[18, 22] In both trials, it was unclear if an appropriate statistical analysis had been conducted owing to the way in which researchers determined the minimum number of participants needed for the study (Q12).[18, 22]

We rated three trials positively for 11 out of the 13 criteria.[7, 9, 12] In one of these trials, there was no blinding of trial participants (Q4) and the personnel who administered the treatment (Q5). However, the nature of the intervention in this trial is likely to have precluded the use of blinding as it evaluated a home-based rehabilitation programme.[9] In another trial, there was no blinding of the personnel who administered the treatment (Q5) and it was unclear if key differences existed at baseline between participants in the treatment and comparator group (Q3).[7] In the third trial, it was unclear if complete follow-up information had been provided about all participants (Q8). The research team also only analysed the data of participants who completed the trial and therefore we could not give a positive rating for the use of an intention to treat (ITT) analysis (Q9).[12]

Six trials met ten criteria[6, 14, 16, 19, 20, 23] and 12 trials were rated positively for between four and nine criteria.[4, 5, 8, 10, 11, 13, 15, 17, 21, 24-26] A number of common issues were identified across the 18 trials that met ten or fewer criteria. For example, in 11 trials, we could not tell if an appropriate procedure had been used to prevent researchers from knowing whether the next patient would be allocated to the treatment or comparator group (allocation concealment) (Q2).[6, 10, 11, 13, 15, 16, 19, 21, 24-26] An ITT analysis was not conducted in nine of the 18 trials (Q9)[4, 6, 8, 10, 14, 17, 19, 23, 26] and in two others, we could not tell if it had been used.[11, 25]

In seven of the 18 trials we could not tell if an appropriate method of randomisation had been used for allocating participants to treatment groups (Q1).[10, 11, 15, 17, 21, 24, 25] It was also unclear if an appropriate statistical analysis had been conducted in seven trials (Q12) owing to a lack of information about the sample size requirements of the study[10, 11, 15, 21, 24, 25] or because the trial did not have enough participants to reliably detect a significant difference between groups.[13]

In five trials that we rated positively for nine[4, 5, 8] or ten[14, 20] criteria, there was no blinding of trial participants (Q4) and the personnel who administered the treatment (Q5). However, the nature of the intervention in these trials is likely to have precluded the use of blinding. In two of the five trials, outcome assessors were also not blinded,[4, 5] and in another study, we could not tell if they were blinded (Q6).[8] In two other studies that we rated positively for ten criteria, there was

no blinding of the personnel who administered the treatment owing to the nature of the intervention (Q5).[16, 19]

In six of the other 11 trials rated positively for fewer than 11 criteria, we could not tell if there was blinding of outcome assessors (Q6),[6, 10, 15, 21, 23, 24] and in another study they were not blinded.[26] In seven of the 11 trials, there was no blinding of participants (Q4) and the personnel who administered the treatment (Q5).[10, 13, 15, 17, 21, 24, 25] There was no blinding of trial participants, the personnel who administered the treatment nor outcome assessors in one other trial.[11] The nature of the intervention in some of these trials may have prevented the use of blinding.

Conclusion

To conclude, in this evidence scan, we identified 23 RCTs published between September and December 2024 that examined interventions for the treatment or rehabilitation of people with Long COVID. Across our 11 reports produced to date, we have identified and assessed 179 trials published since January 2022. Twelve trials in the current update focused on treating generalised or multiple symptoms of Long COVID, which included one study of programme cost-effectiveness. Four trials had a primary focus on treating fatigue and another focused on fatigue and/or cognitive dysfunction. Two other trials focused primarily on treating cognitive dysfunction. Three trials evaluated treatments for respiratory or cardiovascular function or physical fitness, one of which had a focus on both dyspnoea and fatigue. The remaining trial focused on treating post COVID depression and anxiety. Two of the 23 trials were rated positively for 12 out of 13 quality criteria and three met 11 criteria. The remaining 18 trials gained positive ratings for between four and ten criteria.

Table 1: Study characteristics (n=23)

First author (year) Country	Aim of study	Main symptom or effect experienced	Post COVID time	Participants' gender (n) and % female	Primary outcome(s) of interest	Comparator
Armstrong (2024)[4] UK	To investigate whether a novel eight-week personalised health behaviour support programme, focusing on the stability of symptoms and strategies to improve activities of daily living, was feasible and acceptable in adults with post-COVID syndrome	General/multiple: post-COVID syndrome (at least one symptom affecting functional abilities)	After symptom onset or diagnosis: continued symptoms for at least 12 weeks	Mixed (32; 27 completed) 53% female (17/32)	Feasibility, tolerability and/or safety: clinical outcomes were secondary and not powered to detect changes	Usual care: self-help available in local area, including online resources
Bai (2024)[5] China	To assess whether a tailored four-week exercise training programme can alleviate persistent symptoms and improve cardiopulmonary function in Long COVID-19 patients	General/multiple: at least one of the following: cough, dizziness, fatigue, cognitive impairment, palpation, chest tightness or pain, muscle pain, vision disturbance, dyspnoea, diarrhoea, anosmia/ageusia, insomnia, hair loss, voice change, or other new symptom after COVID-19 infection	After symptom onset or diagnosis: at least three months from the onset of COVID-19	Mixed (24) 58% female (14/24)	Pulmonary/respiratory or cardiovascular function: forced expiratory volume in the first second (FEV_1), forced vital capacity (FVC) and FEV_1/FVC ratio; peak oxygen uptake (peak VO_2), oxygen uptake of anaerobic threshold (AT VO_2), O_2 pulse, respiratory exchange ratio (RER), slope of ventilatory equivalent for carbon dioxide (VE/VCO_2),	Usual care: guideline-based recommendations for a healthy lifestyle and WHO guidelines on self-management after COVID-19 related illness

					pulmonary ventilation (VE), VO_2 over work power Physical fitness: maximum load exercise test - perceived exertion Quality of life: HRQoL (SF-12) Psychological: depression and anxiety: Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder-7 (GAD-7) scales; Perceived Stress Scale General or multiple: severity of symptoms Other: Insomnia Severity Index (ISI)	
Calvani (2024)[6] Italy	To explore the impact of beetroot juice supplementation on physical function, gut microbiota, and systemic inflammation in adults with Long COVID	Fatigue/lack of energy	After symptom onset or diagnosis: at least three months from the onset of COVID-19 symptoms	Mixed (31; 25 analysed) 56% female (14/25)	Fatigue: fatigue resistance test; handheld hydraulic dynamometer	Placebo solution

Crucianelli (2024)[7] Italy	To investigate the effect of sulphur water versus placebo inhalations on participants affected by Long COVID syndrome	Respiratory or cardiovascular function or physical fitness	After recovery: more than four months since negative swab	Mixed (30) 57% female (17/30)	Pulmonary/respiratory or cardiovascular function: spirometry - resting, forced and diffusing capacity of the lungs for carbon monoxide (DLCO); St. George Respiratory Questionnaire (SGRQ) Physical fitness: 6MWT; perceived exertion (Borg score)	Placebo: sterile thermal water without sulphur
Cunha (2024)[8] Brazil	To investigate the impacts of online and face-to-face Mat Pilates training in adults with persistent symptoms of Long COVID on health outcomes	Fatigue/lack of energy	After symptom onset or diagnosis: at least three months after diagnosis	Mixed (69; 49 analysed) 90% female (44/49)	Physical fitness: trunk flexion Blood parameters: total cholesterol; triglycerides; high-density lipoprotein (HDL) and low-density lipoprotein (LDL) cholesterol; glucose; glycated haemoglobin; adiponectin	Booklet of stretching instructions
Dwiputra (2024)[9] Indonesia	To assess the effect of home-based breathing and chest mobility exercise on the cardiorespiratory functional capacity of Long COVID patients with cardiovascular comorbidity	General/multiple: any symptoms of Long COVID, with (pre-existing) cardiovascular comorbidities	After symptom onset or diagnosis: at least 30 days after diagnosis	Mixed (46; 43 completed) 48% female (22/46)	Pulmonary/respiratory or cardiovascular function: peak expiratory flow rate (PEFR); peak cough flow (PC); peak metabolic equivalents; (METS), and the VO_2 peak	Standard home-based cardiac rehabilitation programme

					Physical fitness: 6MWT; total exercise duration, the presence of ischemia	
Esparza (2024)[10] Ecuador	To analyse the effects of a pulmonary telerehabilitation programme to improve respiratory capacity in young adults with post-COVID-19 conditions	General/multiple: PCC symptoms	After symptom onset or diagnosis: symptoms persisting for three months after the onset of COVID-19	Mixed (18; 16 analysed) 63% female (10/16)	Pulmonary/respiratory or cardiovascular function: oxygen saturation, heart rate, respiratory rate, and blood pressure Physical fitness: 6MWT; 1 min sit-to-stand test; perceived exertion (Borg scale)	No treatment
Gagnon (2024) [11] Canada	To describe the effects of two weeks of supplemental oxygen on cognitive performance and peripheral and cerebral oxygen saturation in participants with Long COVID	Cognitive dysfunction: diagnosed with Long COVID and self-reported cognitive concerns or a recent diagnosis of COVID-19 related cognitive impairment	After symptom onset or diagnosis: at least three months from the onset of SARS-CoV-2 symptoms	Mixed (21:18 completed) 81% female (17/21)	Pulmonary/respiratory or cardiovascular function: cerebral and peripheral oxygen saturation; cerebral near infra-red spectroscopy; fingertip pulse oximetry Cognitive: Montreal Cognitive Assessment (MoCA) Hopkins Verbal Learning Test (HVLT) Digit Span from Weschler Adult Intelligence Scale (WAIS-IV) Verbal Fluency Subjective Cognitive Impairment Questionnaire	Usual care

Guttuso (2024)[12] USA	To assess the effects of lithium aspartate therapy on post-COVID-19 fatigue and cognitive dysfunction	Cognitive function: Brain Fog Severity Scale (BFSS) score of 28 or higher or Fatigue/lack of energy: Fatigue Severity Scale 7-item (FSS-7) score of 28 or higher	After recovery: more than four weeks after recovery	Mixed (52; 50 completed) 42% female (22/52)	Fatigue FSS-7 Cognitive BFSS	Placebo: microcrystalline cellulose
Jorge (2025)[13] Brazil	To evaluate the impact of eight weeks of Pilates on physical fitness and sleep quality of individuals with post-COVID-19 syndrome	General/multiple: post-COVID syndrome (PCS-19). One or more chronic symptom	After symptom onset or diagnosis: at least 12 weeks from the onset of SARS-CoV-2 symptoms	Mixed (59; 44 completed) 71% female (42/59)	Physical fitness: 6MWT	Supervised physical exercise group Control - booklet of home exercises and health care instructions
Kaddoussi (2024)[14] Tunisia	To evaluate the impacts of an ambulatory cardiopulmonary rehabilitation programme on submaximal aerobic capacity of Long COVID patients	Respiratory or cardiovascular function or physical fitness: dyspnoea	After symptom onset or diagnosis: three months after diagnosis	Mixed (36; 30 analysed) 53% female (16/30)	Physical fitness: 6MWT	No intervention: control group maintained the usual level of sedentary physical activities
Khajehnezhad (2024)[15] Iran	To compare the efficacy of mindfulness-based cognitive therapy and Beck's cognitive therapy in treating depression and	Neuropsychiatric: depression and anxiety	After recovery: recovered from COVID-19 for at least two months	Mixed (40) 83% female (33/40)	Psychological: Beck Anxiety Questionnaire (BAQ) and Beck Depression Questionnaire (BDQ)	No intervention: usual care

	anxiety in COVID-19 survivors					
Khodabakhshian (2024)[16] Iran	To investigate the effect of auriculotherapy on persistent fatigue in patients who have recovered from acute phase COVID-19	Fatigue/lack of energy	After symptom onset or diagnosis: at least six weeks after symptom onset	Mixed (52; 44 analysed) 75% female (33/44)	Fatigue: Chalder Fatigue Scale (CFS)	Sham treatment
León-Herrera (2024)[17] Spain	To assess the effectiveness of a multimodal rehabilitation programme (online and synchronous) in managing the characteristic symptoms of Long COVID and, consequently, in improving quality of life	General/multiple: persistent symptoms - diagnosis of Long COVID syndrome	Unclear/not stated: at least three months since acute infection	Mixed (134; 124 completed) 84% female (113/134)	Quality of life: Short Form Health Survey (SF-36)	No intervention: usual care
Lukkunaprasit (2024)[18] Thailand	To evaluate the efficacy and safety of a combined plant extract formulation (Clears-belong Plus®), containing lime, bamboo grass, cannabis leaves, galangal roots, and	General/multiple: at least one Long COVID symptom of interest: fatigue, post-exertional malaise, fever, shortness of breath, cough, sputum, chest pain, palpitation, brain fog, headache, insomnia, dizziness,	After symptom onset or diagnosis: at least four weeks after positive test	Mixed (66; 53 completed) 62% female (41/66)	General or multiple symptoms/clinical outcomes: symptom severity: Long COVID symptom questionnaire designed specifically for the study	Placebo

	black pepper), in participants with Long COVID	numbness, altered sense of smell/taste, anxiety, loose stools, stomach pain, myalgia, and rash			Blood parameters: changes in C-reactive protein (CRP) levels	
Maritescu (2024)[19] Romania	To investigate the effects of pulmonary rehabilitation and additional progressive muscle relaxation techniques in patients with long-term COVID-19 symptoms	Moderate to severe dyspnoea and fatigue	Unclear/not stated: at least three months post-infection	Mixed (70; 61 completed) 26% female (16/61)	Pulmonary/respiratory or cardiovascular function: spirometry: FVC, FEV_1 and FEV_1/FVC Physical fitness: 6MWT Psychological: General Health Questionnaire (GHQ-12); Patient Health Questionnaire (PHQ-9); Generalized Anxiety Disorder Scale (GAD-7) Other: sleep quality: Pittsburgh Sleep Quality Index (PSQI)	Pulmonary rehabilitation programme only
Nwankwo (2024)[20] UK	To assess the cost-effectiveness of a programme of physical and mental health rehabilitation compared with best practice usual care in people with post-COVID-19 condition who were previously hospitalised	General/multiple: ongoing physical and/or mental health sequelae	After recovery: at least three months after hospital discharge	Mixed (585) 52% female (304/585)	Quality of life: quality-adjusted life-year (QALY) - EQ-5D-5L	Usual care

Ramirez-Velez (2024)[21] Spain	To assess the effects of a six-week personalised progressive resistance training intervention, with a five-day washout period between arms on cardiopulmonary fitness, muscular strength, Long COVID symptoms, quality of life, and emotional distress	General/multiple: Long COVID with mild or moderate symptoms	After symptom onset or diagnosis: more than 90 days since onset of COVID symptoms	Mixed (89 completed) 66% female (59/89)	Pulmonary/respiratory or cardiovascular function: change in VO_2	Usual care: avoiding structured exercise programmes
Rana (2024)[22] India	To identify the effects of individualized homeopathic medicinal products against placebos in post-COVID-19 conditions	General/multiple: post-COVID condition	After symptom onset or diagnosis: at least three months from the onset of COVID-19 symptoms	Mixed (60; 57 completed) 67% female (40/60)	General or multiple symptoms/clinical outcomes: post-COVID-19 symptoms checklist	Placebo plus concomitant care
Ranisavljev (2024)[23] Serbia	To evaluate the effects of synbiotic supplementation on patient-reported outcomes, exercise tolerance, and tissue metabolism in individuals with post-COVID-19 myalgic encephalomyelitis/ch	Fatigue/lack of energy: moderate-to-severe fatigue at least one additional COVID-19-related symptom	After symptom onset or diagnosis: within three months of a positive test	Mixed (32; 26 completed) 50% female (13/26)	Fatigue: Multidimensional Fatigue Inventory, MFI-20	Placebo: maltodextrin

	ronic fatigue syndrome (ME/CFS)					
Soldatenko (2024)[24] Crimea	To assess the effects of systemic ozone therapy used to complement drug therapy on plasma levels of TNFα, IL1β, IL6 and parameters of mental status in patients with post-COVID asthenic syndrome	General/multiple: asthenic syndrome symptoms (chronic fatigue, cognitive dysfunction, sleep disorders, and anxiety)	Unclear/not stated: persisting for 3 to 12 months after having COVID-19	Mixed (140 plus 50 non-random controls with no history of COVID) 62% female (87/140)	Psychological: Hamilton Anxiety Rating Scale (HARS) Clinical Global Impressions scale - Improvement subscale (CGI-S) Fatigue: Multidimensional Fatigue Inventory (MFI-20) Blood parameters: plasma TNFα, IL1β, and IL6 levels (enzyme-linked immunoassay, ELISA) Cognitive: Montreal Cognitive Assessment (MoCa) Other: Insomnia Severity Index (ISI); adverse events	Drug therapy without systemic ozone therapy
Victoria (2024)[25] USA	To investigate the efficacy of a digital intervention to reduce cognitive and functional deficits in adults with persistent post-COVID-19 cognitive dysfunction	Cognitive function: deficit in executive function	Unclear/not stated: more than four weeks after acute illness	Mixed (110; 92 completed) 79% female (77/98)	Cognitive: sustained attention (TMB Digital Symbol Matching Task DSMT - a digital version of the Symbol Digit Modalities Test)	Waitlist control

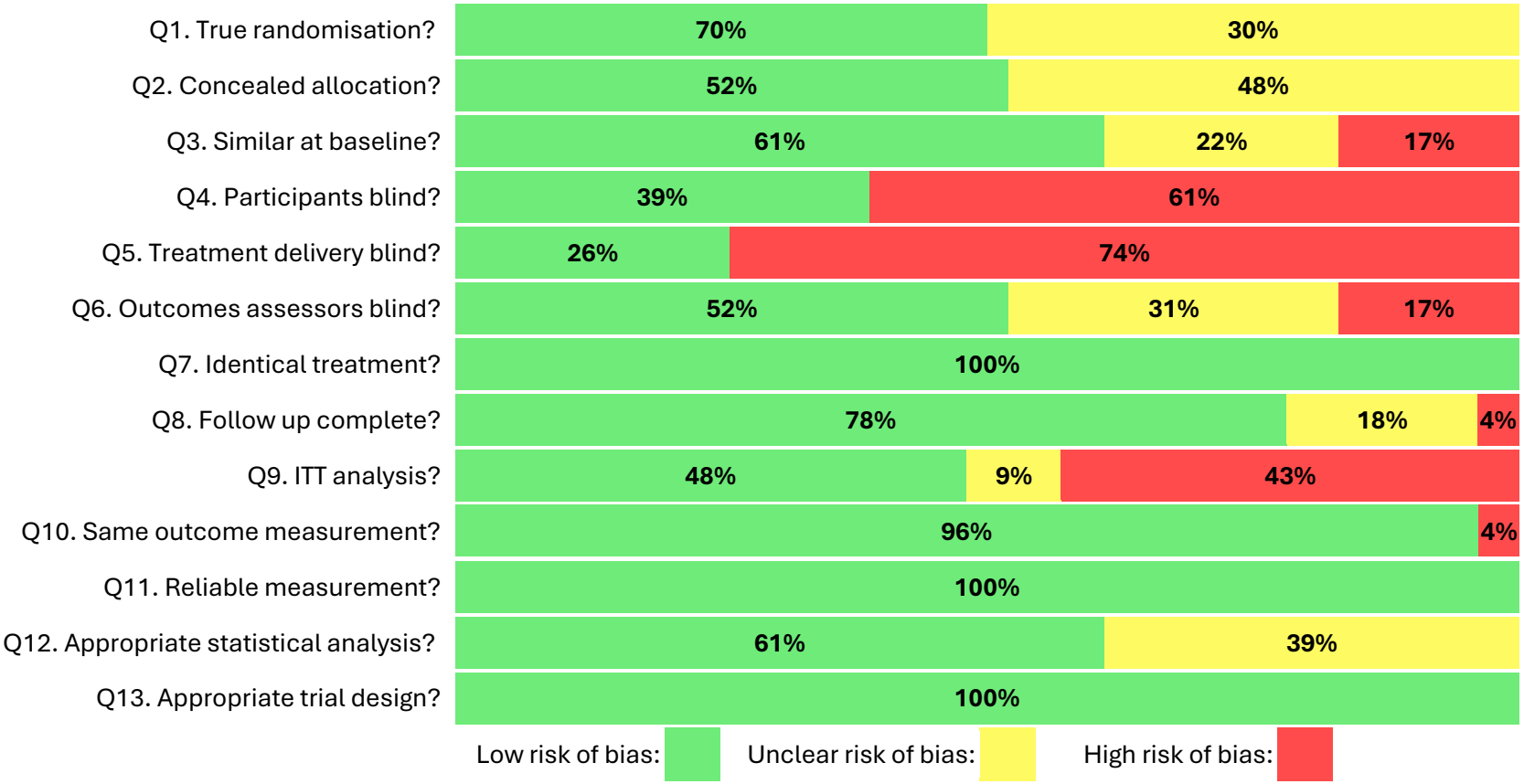
Zulbaran-Rojas (2024)[26] USA	To investigate the effect of transcutaneous electrical nerve stimulation (TENS) for fibromyalgia-like symptoms, such as musculoskeletal pain, fatigue, and/or gait impairment, in individuals with Long COVID	General/multiple: musculoskeletal pain, fatigue and/or weakness in one or more body sections	Unclear/not stated: persistent symptoms that were not present before acute COVID-19 infection	Mixed (30; 25 analysed) 76% female (19/25)	Functional interference from pain - Brief Pain Index questionnaire interference composite score (BPI-I)	Placebo: TENS machine giving low-dose therapy (10%)

Table 2: JBI risk of bias assessment

First author (year)	Q1. True randomisation?	Q2. Concealed allocation?	Q3. Similar at baseline?	Q4. Participants blind?	Q5. Treatment delivery blind?	Q6. Outcomes assessors blind?	Q7. Identical treatment?	Q8. Follow up complete?	Q9. ITT analysis?	Q10. Same outcome measurement?	Q11. Reliable measurement?	Q12. Appropriate statistical analysis?	Q13. Appropriate trial design?
Armstrong (2024)	+	+	+	-	-	-	+	+	-	+	+	+	+
Bai (2024)	+	+	?	-	-	-	+	+	+	+	+	+	+
Calvani (2024)	+	?	+	+	+	?	+	+	-	+	+	+	+
Crucianelli (2024)	+	+	?	+	-	+	+	+	+	+	+	+	+
Cunha (2024)	+	+	+	-	-	?	+	+	-	+	+	+	+
Dwiputra (2024)	+	+	+	-	-	+	+	+	+	+	+	+	+
Esparza (2024)	?	?	+	-	-	?	+	?	-	+	+	?	+
Gagnon (2024)	?	?	?	-	-	-	+	+	?	-	+	?	+
Guttuso (2024)	+	+	+	+	+	+	+	?	-	+	+	+	+
Jorge (2025)	+	?	-	-	-	+	+	+	+	+	+	?	+
Kaddoussi (2024)	+	+	+	-	-	+	+	+	-	+	+	+	+
Khajehnezhad (2024)	?	?	?	-	-	?	+	+	+	+	+	?	+
Khodabakhshian (2024)	+	?	-	+	-	+	+	+	+	+	+	+	+
León-Herrera (2024)	?	+	-	-	-	+	+	+	-	+	+	+	+
Lukkunaprasit (2024)	+	+	+	+	+	+	+	+	+	+	+	?	+
Maritescu (2024)	+	?	+	+	-	+	+	+	-	+	+	+	+
Nwankwo (2024)	+	+	+	-	-	+	+	-	+	+	+	+	+
Ramirez-Velez (2024)	?	?	?	-	-	?	+	?	+	+	+	?	+
Rana (2024)	+	+	+	+	+	+	+	+	+	+	+	?	+
Ranisavljev (2024)	+	+	+	+	+	?	+	?	-	+	+	+	+

Soldatenko (2024)	?	?	+	-	-	?	+	+	+	+	+	?	+
Victoria (2024)	?	?	+	-	-	+	+	+	?	+	+	?	+
Zulbaran-Rojas (2024)	+	?	-	+	+	-	+	+	-	+	+	+	+

Low risk of bias: + Unclear risk of bias: ? High risk of bias: -



NB: figures may not add up to 100% due to rounding. In our reports, we adopt a 'once randomised, always analysed' approach to assessing the use of an ITT analysis (Q9), which is consistent with previous research and guidance.[30-32]

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Appendix 1 – search strategies

Cochrane Controlled Register of Trials (CENTRAL)
via Wiley http://onlinelibrary.wiley.com/
Issue: Issue 11 of 12, November 2024
Date searched: 4th December 2024
Records retrieved: 2084

Although 2371 records were identified overall in CENTRAL, trial register records were removed from this set, leaving a total of 2084 records downloaded for this update.

#1 MeSH descriptor: [Post-Acute COVID-19 Syndrome] this term only 301
#2 MeSH descriptor: [COVID-19] this term only and with qualifier(s): [complications - CO] 408
#3 MeSH descriptor: [COVID-19] this term only 8404
#4 MeSH descriptor: [SARS-CoV-2] this term only 3647
#5 MeSH descriptor: [Syndrome] this term only 6838
#6 MeSH descriptor: [Survivors] this term only 1840
#7 #3 or #4 8666
#8 #5 or #6 8672
#9 #7 and #8 108
#10 #1 or #2 or #9 744
#11 (long next (covid* or covid-19 or covid19 or coronavirus) or longcovid*):ti,ab,kw 602
#12 (post next (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2) or postcovid*):ti,ab,kw 947
#13 ((post acute or postacute) near/2 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 1699
#14 PASC:ti,ab,kw 85
#15 (sequela* near/6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 207
#16 (chronic near/2 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 45
#17 (ongoing next (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 117
#18 ((long* term or longterm) near/3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 1016
#19 (persist* near/6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 334
#20 ((post discharg* or postdischarg*) near/4 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw1557
#21 ((long haul* or longhaul*) near/6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 832
#22 (surviv* near/3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 223
#23 (after next (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 370
#24 ((ongoing or lasting or prolonged or fluctuat* or residual* or continu* or linger*) near/6 (symptom* or effect* or complication* or sequela* or syndrome or illness* or disorder$ or dysfunction* or impair* or impact* or consequence*) near/6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)):ti,ab,kw 210
#25 {OR #11-#24} 3252

#26 #10 or #25 with Cochrane Library publication date Between Jan 2022 and Dec 2024, in Trials 2355
#27 #10 or #25 with Publication Year from 2022 to 2024, in Trials 2213
#28 #26 or #27 2371

MEDLINE ALL
(includes: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE Daily and Ovid MEDLINE)
via Ovid http://ovidsp.ovid.com/
Date range: 1946 to December 02, 2024
Date searched: 4th December 2024
Records retrieved: 1395

The MEDLINE strategy below includes a search filter to limit retrieval to RCTs using the Cochrane Highly Sensitive Search Strategy for identifying randomized trials in MEDLINE: sensitivity and precision-maximizing version (2023 revision); Ovid format.

Lefebvre C, Glanville J, Briscoe S, Littlewood A, Marshall C, Metzendorf M-I, Noel-Storr A, Rader T, Shokraneh F, Thomas J, Wieland LS. Technical Supplement to Chapter 4: Searching for and selecting studies. In: Higgins JPT, Thomas J, Chandler J, Cumpston MS, Li T, Page MJ, Welch VA (eds). Cochrane Handbook for Systematic Reviews of Interventions Version 6.4 (updated October 2023). Cochrane, 2023. Available from: www.training.cochrane.org/handbook.

1 Post-Acute COVID-19 Syndrome/ (3990)
2 COVID-19 post-intensive care syndrome.mp. (6)
3 COVID-19/co [Complications] (19682)
4 COVID-19/ or SARS-CoV-2/ (287929)
5 Syndrome/ (124717)
6 Survivors/ (32147)
7 5 or 6 (156739)
8 4 and 7 (1230)
9 1 or 2 or 3 or 8 (22640)
10 ((long adj (covid$ or covid-19 or covid19 or coronavirus)) or longcovid$).ti,ab,kf,ot,bt. (6518)
11 ((post adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) or postcovid$).ti,ab,kf,ot,bt. (12700)
12 ((post acute or postacute) adj2 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (1285)
13 PASC.ti,ab,kf,ot,bt. (1165)
14 (sequela$ adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (3445)
15 (chronic adj2 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (410)
16 (ongoing adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (3559)
17 ((long$ term or longterm) adj3 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (2818)
18 (persist$ adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (5177)
19 ((post discharg$ or postdischarg$) adj4 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (104)

20 ((long haul$ or longhaul$) adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (297)
21 (surviv$ adj3 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (3612)
22 (after adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (11371)
23 ((ongoing or lasting or prolonged or fluctuat$ or residual$ or continu$ or linger$) adj6 (symptom$ or effect$ or complication$ or sequela$ or syndrome or illness$ or disorder$ or dysfunction$ or impair$ or impact$ or consequence$) adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kf,ot,bt. (3511)
24 or/10-23 (40509)
25 9 or 24 (55433)
26 exp randomized controlled trial/ (628758)
27 controlled clinical trial.pt. (95644)
28 randomi#ed.ab. (799767)
29 placebo.ab. (254044)
30 clinical trials as topic.sh. (203931)
31 randomly.ab. (447768)
32 trial.ti. (323746)
33 26 or 27 or 28 or 29 or 30 or 31 or 32 (1696027)
34 exp animals/ not humans.sh. (5282468)
35 33 not 34 (1565642)
36 25 and 35 (1924)
37 limit 36 to yr="2022 -Current" (1402)
38 (2022* or 2023* or 2024*).dt. (4622648)
39 36 and 38 (1364)
40 37 or 39 (1411)
41 preprint.pt. (33156)
42 40 not 41 (1395)

Embase
via Ovid http://ovidsp.ovid.com/
Date range: 1974 to 2024 December 03
Date searched: 4th December 2024
Records retrieved: 2070

The Embase strategy below includes a search filter to limit retrieval to RCTs:

Lefebvre C, Eisinga A, McDonald S, Paul N. Enhancing access to reports of clinical trials published world-wide - the contribution of EMBASE records to the Cochrane Central Register of Controlled Trials (CENTRAL) in The Cochrane Library. *Emerg Themes Epidemiol* 2008;5:13

1 long COVID/ (9096)
2 ((long adj (covid$ or covid-19 or covid19 or coronavirus)) or longcovid$).ti,ab,kw,ot. (6755)
3 ((post adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) or postcovid$).ti,ab,kw,ot. (16162)
4 ((post acute or postacute) adj2 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (1151)
5 PASC.ti,ab,kw,ot. (1455)
6 (sequela$ adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (4263)

7 (chronic adj2 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (538)
8 (ongoing adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (3779)
9 ((long$ term or longterm) adj3 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (3532)
10 (persist$ adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (6675)
11 ((post discharg$ or postdischarg$) adj4 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (195)
12 ((long haul$ or longhaul$) adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (317)
13 (surviv$ adj3 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (5310)
14 (after adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (15557)
15 ((ongoing or lasting or prolonged or fluctuat$ or residual$ or continu$ or linger$) adj6 (symptom$ or effect$ or complication$ or sequela$ or syndrome or illness$ or disorder$ or dysfunction$ or impair$ or impact$ or consequence$) adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,kw,ot. (4372)
16 or/2-15 (51633)
17 1 or 16 (52459)
18 random$.ti,ab. (2150562)
19 factorial$.ti,ab. (50940)
20 crossover$.ti,ab. (96536)
21 cross-over$.ti,ab. (39624)
22 placebo$.ti,ab. (389241)
23 (doubl$ adj blind$).ti,ab. (258291)
24 (singl$ adj blind$).ti,ab. (34457)
25 assign$.ti,ab. (530346)
26 allocat$.ti,ab. (222945)
27 volunteer$.ti,ab. (308078)
28 Crossover Procedure/ (80553)
29 double blind procedure/ (226508)
30 Randomized Controlled Trial/ (856586)
31 single blind procedure/ (57241)
32 controlled clinical trial/ (474534)
33 or/18-32 (3303249)
34 (animal/ or animal experiment/ or animal model/ or animal tissue/ or nonhuman/) not exp human/ (7139142)
35 33 not 34 (2950797)
36 17 and 35 (3624)
37 limit 36 to yr="2022 -Current" (2771)
38 (2022$ or 2023$ or 2024$).dd. (1797730)
39 36 and 38 (991)
40 37 or 39 (2895)
41 (conference abstract or "conference review").pt. (5311919)
42 40 not 41 (2210)
43 limit 42 to "remove preprint records" (2070)

PsycINFO
via Ovid http://ovidsp.ovid.com/
Date range: 1806 to November 2024 Week 5
Date searched: 4th December 2024
Records retrieved: 605

The PsycINFO strategy below includes a search filter to limit retrieval to RCTs developed by the information specialist at the Cochrane Common Mental Disorders Group.

1 post-covid-19 conditions/ (357)
2 covid-19/ (42114)
3 coronavirus/ (6195)
4 syndromes/ (18578)
5 sequelae/ (4110)
6 2 or 3 (44609)
7 4 or 5 (22619)
8 6 and 7 (398)
9 1 or 8 (715)
10 ((long adj (covid$ or covid-19 or covid19 or coronavirus)) or longcovid$).ti,ab,id,ot. (479)
11 ((post adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) or postcovid$).ti,ab,id,ot. (1510)
12 ((post acute or postacute) adj2 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (81)
13 PASC.ti,ab,id,ot. (68)
14 (sequela$ adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (277)
15 (chronic adj2 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (32)
16 (ongoing adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (424)
17 ((long$ term or longterm) adj3 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (255)
18 (persist$ adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (395)
19 ((post discharg$ or postdischarg$) adj4 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (8)
20 ((long haul$ or longhaul$) adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (27)
21 (surviv$ adj3 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (397)
22 (after adj (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (765)
23 ((ongoing or lasting or prolonged or fluctuat$ or residual$ or continu$ or linger$) adj6 (symptom$ or effect$ or complication$ or sequela$ or syndrome or illness$ or disorder$ or dysfunction$ or impair$ or impact$ or consequence$) adj6 (covid$ or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)).ti,ab,id,ot. (452)
24 or/10-23 (3913)
25 randomized clinical trials/ (580)
26 randomized controlled trials/ (1119)
27 clinical trials/ (12445)
28 clinical trial.md. (44732)

29 (randomi#ed or randomi#ation or randomi#ing).ti,ab,id. (120085)
30 randomly.ti,ab,id. (88960)
31 (RCT or "at random" or (random* adj3 (administ* or allocat* or assign* or class* or cluster* or control* or crossover or cross over or pragmatic or quasi or determine* or divide* or division or distribut* or expose* or fashion or number* or place* or recruit* or split or substitut* or treat*))).ti,ab,id. (139988)
32 (groups or (control* adj3 group*)).ab. (648180)
33 ((control* or trial or study or group*) and (waitlist* or wait* list* or ((treatment or care) adj2 usual))).ti,ab,id,hw. (20893)
34 ((single or double or triple or treble) adj2 (blind* or mask* or dummy)).ti,ab,id. (30540)
35 trial.ti. (42156)
36 (placebo or sham).ti,ab,id,hw. (60841)
37 treatment outcome.md. (25626)
38 treatment effectiveness evaluation/ (30569)
39 mental health program evaluation/ (2534)
40 or/25-39 (861729)
41 9 or 24 (4103)
42 40 and 41 (677)
43 limit 42 to yr="2022 -Current" (537)
44 (2022$ or 2023$ or 2024$).up. (566988)
45 42 and 44 (593)
46 43 or 45 (605)

CINAHL Complete
via Ebsco https://www.ebsco.com/
Date range: Inception to 20241203
Date searched: 4th December 2024
Records retrieved: 1061

The CINAHL strategy below includes a search filter to limit retrieval to RCTs developed by Glanville et al.:

Glanville J, Dooley G, Wisniewski S, Foxlee R, Noel-Storr A. Development of a search filter to identify reports of controlled clinical trials within CINAHL Plus. *Health Info Libr J* 2019;36:73-90.

S1 (MH "Post-Acute COVID-19 Syndrome") 1,635
S2 TI (long N1 (covid* or covid-19 or covid19 or coronavirus) or longcovid*) OR AB (long N1 (covid* or covid-19 or covid19 or coronavirus) or longcovid*) 1,940
S3 TI (post N1 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2) or postcovid*) OR AB (post N1 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2) or postcovid*) 2,073
S4 TI (("post acute" or post-acute or postacute) N3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (("post acute" or post-acute or postacute) N3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 446
S5 TI PASC OR AB PASC 132
S6 TI (sequela* N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (sequela* N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 706

S7 TI (chronic N2 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (chronic N2 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 308
S8 TI (ongoing N1 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (ongoing N1 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 766
S9 TI ((long* N1 term or long-term or longterm) N3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB ((long* N1 term or long-term or longterm) N3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 1,224
S10 TI (persist* N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (persist* N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 1,124
S11 TI ((post N1 discharg* or post-discharg* or postdischarg*) N4 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB ((post N1 discharg* or post-discharg* or postdischarg*) N4 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 57
S12 TI ((long N1 haul* or long-haul* or longhaul*) N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB ((long N1 haul* or long-haul* or longhaul*) N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 90
S13 TI (surviv* N3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (surviv* N3 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 1,194
S14 TI (after N1 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB (after N1 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 4,999
S15 TI ((ongoing or lasting or prolonged or fluctuat* or residual* or continu* or linger*) N6 (symptom* or effect* or complication* or sequela* or syndrome or illness* or disorder$ or dysfunction* or impair* or impact* or consequence*) N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) OR AB ((ongoing or lasting or prolonged or fluctuat* or residual* or continu* or linger*) N6 (symptom* or effect* or complication* or sequela* or syndrome or illness* or disorder$ or dysfunction* or impair* or impact* or consequence*) N6 (covid* or covid-19 or covid19 or coronavirus or SARS-CoV-2 or SARS-CoV2 or SARSCoV2 or SARSCoV-2)) 1,028
S16 (MH "Randomized Controlled Trials") 147,371
S17 (MH "Double-Blind Studies") 54,527
S18 (MH "Single-Blind Studies") 16,153
S19 (MH "Random Assignment") 88,301
S20 (MH "Pretest-Posttest Design") 57,291
S21 (MH "Cluster Sample") 5,757
S22 TI (randomised OR randomized) 155,799
S23 AB random* 409,489
S24 TI trial 200,525
S25 MH (sample size) AND AB (assigned OR allocated OR control) 4,483
S26 MH (placebos) 14,567
S27 PT (randomized controlled trial) 159,868
S28 AB (control W5 group) 151,711
S29 MH (crossover design) OR MH (comparative studies) 508,290
S30 AB (cluster W3 RCT) 518
S31 MH animals+ 102,128

S32 MH (animal studies) 154,239
S33 TI (animal model*) 3,945
S34 S31 OR S32 OR S33 247,478
S35 MH (human) 2,833,639
S36 S34 NOT S35 212,848
S37 S16 OR S17 OR S18 OR S19 OR S20 OR S21 OR S22 OR S23 OR S24 OR S25 OR S26 OR S27 OR S28 OR S29 OR S30 1,073,644
S38 S37 NOT S36 1,025,492
S39 S1 OR S2 OR S3 OR S4 OR S5 OR S6 OR S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15 13,258
S40 S38 AND S39 1,385
S41 S38 AND S39 Limiters - Publication Date: 20220101-20241231 1,044
S42 (ZD 2022* or 2023* or 2024*) 377,572
S43 S40 AND S42 291
S44 S41 OR S43 1,061

Appendix 2

The Joanna Briggs Institute Critical Appraisal Checklist for Randomized Controlled Trials

Q1 Was true randomization used for assignment of participants to treatment groups? Yes, No, Unclear, NA

Q2 Was allocation to treatment groups concealed? Yes, No, Unclear, NA

Q3 Were treatment groups similar at the baseline? Yes, No, Unclear, NA

Q4 Were participants blind to treatment assignment? Yes, No, Unclear, NA

Q5 Were those delivering treatment blind to treatment assignment? Yes, No, Unclear, NA

Q6 Were outcomes assessors blind to treatment assignment? Yes, No, Unclear, NA

Q7 Were treatment groups treated identically other than the intervention of interest? Yes, No, Unclear, NA

Q8 Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed? Yes, No, Unclear, NA

Q9 Were participants analyzed in the groups to which they were randomized? Yes, No, Unclear, NA

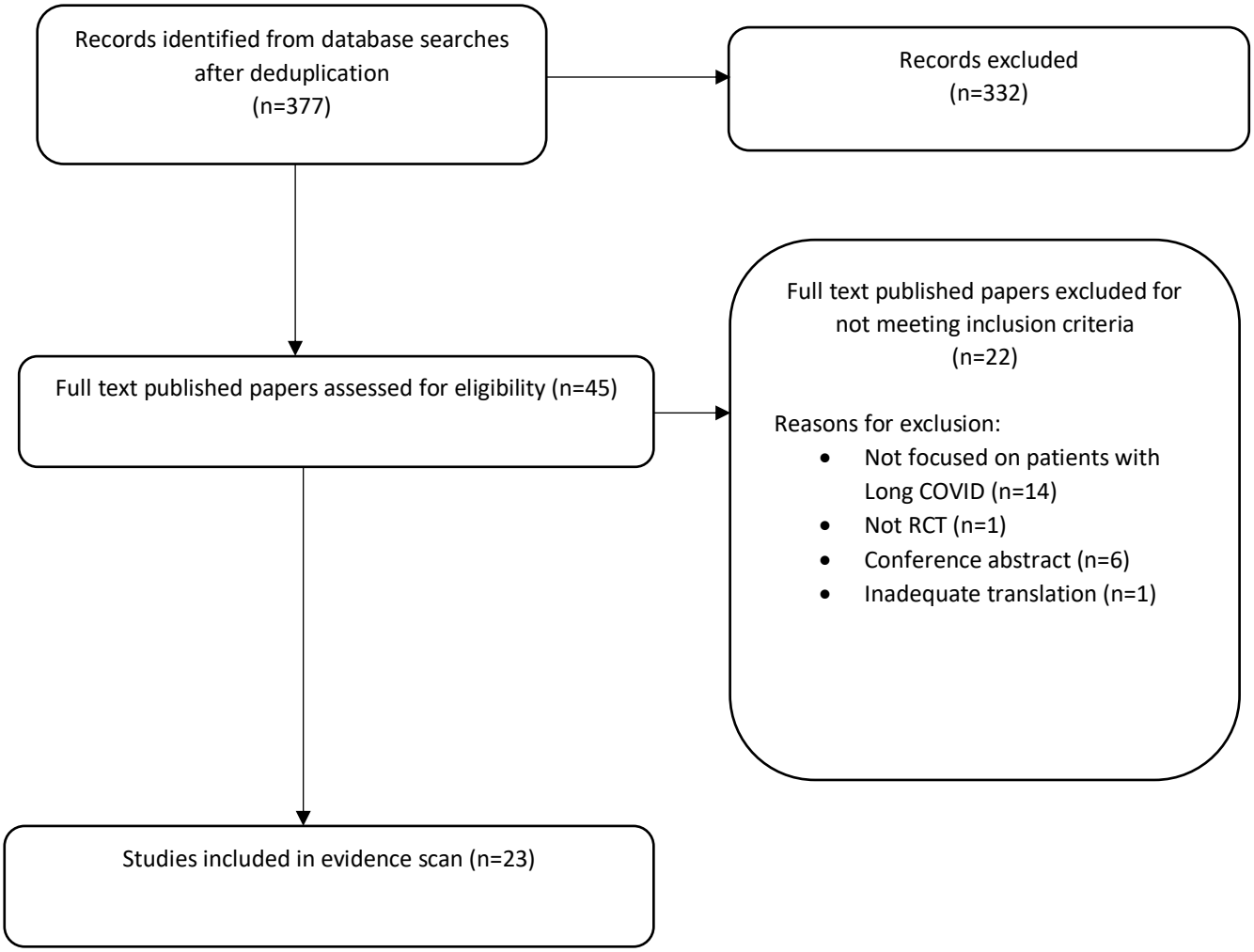
Q10 Were outcomes measured in the same way for treatment groups? Yes, No, Unclear, NA

Q11 Were outcomes measured in a reliable way? Yes, No, Unclear, NA

Q12 Was appropriate statistical analysis used? Yes, No, Unclear, NA

Q13 Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial? Yes, No, Unclear, NA

Appendix 3: Flow of studies through the review



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- Developing capacity for undertaking and using reviews
- Producing new and improved methods for undertaking reviews
- Promoting global awareness and use of systematic reviews in decision-making

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CRD (Centre for Reviews and Dissemination), University of York;
and the London School of Hygiene and Tropical Medicine.

The NIHR Policy Research Programme Reviews Facility collaboration has grown out of a previous 'reviews facility' in Health Promotion and Public Health based at the EPPI Centre, and has been funded by the Department of Health and Social Care since 1995.

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