Occupation-based interventions to improve occupational performance and participation in the hospital setting: a systematic review

DISABILITY AND REHABILITATION
https://doi.org/10.1080/09638288.2023.2236021

Taylor & Francis
Taylor & Francis Group

REVIEW ARTICLE

OPEN ACCESS Check for updates

Occupation-based interventions to improve occupational performance and participation in the hospital setting: a systematic review

Gemma Wall[a,b], Stephen Isbel[a], Louise Gustafsson[c] and Claire Pearce[a]

[a]Discipline of Occupational Therapy, Faculty of Health, University of Canberra, Canberra, Australia; [b]Occupational Therapy Department, University of Canberra Hospital, Canberra, Australia; [c]Discipline of Occupational Therapy, School of Health Sciences and Social Work, Griffith University, Nathan, Australia

ABSTRACT

Purpose: To critically review the evidence for occupation-based interventions in improving occupational performance and participation outcomes in the hospital setting.

Methods: Five databases were searched from 2000–2022. Peer-reviewed studies of any design investigating the impact of occupation-based interventions in the hospital setting were included. Methodological quality was assessed using the appropriate tool for each study design. Following data extraction, a narrative synthesis was conducted.

Results: Thirty-three studies comprising of 26 experimental, five non-experimental, and two mixed methods studies were included ($n = 1646$ participants). Results indicate good evidence to support occupation-based interventions to improve occupational performance and participation outcomes in inpatient rehabilitation; it is unclear whether they are more effective than any control/alternative intervention. Research in the acute and mental health hospital settings were scarcer. Understanding the benefits of occupation-based interventions was enhanced through qualitative results including improving independence and confidence to discharge home, increasing motivation for therapy, connecting with others, and peer-based learning.

Conclusions: Heterogeneity and methodological weaknesses across existing studies limits the conclusions that can be drawn on the impact of occupation-based interventions in the hospital setting. More rigorous research should be conducted with better reporting of intervention design and the use of robust measures of occupational performance.

IMPLICATIONS FOR REHABILITATION

- The use of occupation-based interventions should be considered to improve occupational performance and participation outcomes in the hospital setting.
- There is good evidence to support the impact of occupation-based interventions on improving occupational performance and participation outcomes in the inpatient rehabilitation setting; evidence in the acute and mental health settings is scarcer.
- Occupation-based interventions are valued by both patients and clinicians for their impact on patient outcomes and the patient experience.

ARTICLE HISTORY
Received 15 December 2022
Revised 7 July 2023
Accepted 7 July 2023

KEYWORDS
Acute; mental health; rehabilitation; activities of daily living; occupational therapy

Introduction

Occupational therapists play a key role in the hospital setting to support patients to return to their valued occupations by considering the person and their skills, their occupation-specific goals, and the environment in which they are required to perform these occupations. An individual's ability to perform and engage in their meaningful occupations is central to their identity and is associated with improved health, well-being, and quality of life [1,2]. Whilst initial knowledge surrounding occupational therapy and the therapeutic use of occupation was primarily theoretical, there is a growing body of empirical evidence to support the health-regaining nature of occupation [2].

Occupations refer to the everyday activities that people engage in [3]. It is difficult to categorise occupations as "an individual may experience an occupation as something entirely different from what it appears to be to others" [3, p. 139]. For the purpose of this systematic review however, the commonly addressed occupations in the hospital setting have been grouped into two broad categories. These are self-care occupations, and domestic or community-based occupations; other categories may also include education, work, leisure, rest, and sleep [3]. For this review, self-care occupations may include showering or bathing, bowel and bladder management, dressing, feeding, grooming, and toileting among others [3]. Home or community-based occupations may include medication management, health management and maintenance, meal preparation, cleaning, laundry and other domestic tasks, shopping, home safety and emergency response among others [3]. Occupational therapists can support engagement and independence with these daily activities using a range of interventions.

Occupational therapists practicing in the hospital setting use varying combinations of component-focused, occupation-focused, and occupation-based interventions to achieve patients'

CONTACT Gemma Wall gemma.wall@canberra.edu.au Faculty of Health, University of Canberra 11 Kirinari Street, Bruce, ACT, 2617, Australia
Supplemental data for this article can be accessed online at https://doi.org/10.1080/09638288.2023.2236021

rehabilitative, occupational performance goals [4]. It is important to clarify the differences between these interventions to reduce ambiguity in understanding how occupation is operationalised in practice [5]. For the purpose of this systematic review, ***occupation-focused*** interventions are those by which occupation may or may not be the therapeutic intervention however, occupation is the immediate focus of the evaluation or intervention [6]. ***Component-focused*** interventions bring attention to the "components underlying occupation" and utilises "purposeful and non-purposeful activities specifically geared toward improving strength, range of motion, coordination, visual perception, problem solving, balance, attention, and so forth" [7, p. 355]. Occupation may be a focus of these tasks, whereby improving specific impairments may result in changes to occupational performance however, occupation is not the means of achieving independence nor is it the immediate goal [6]. ***Occupation-based*** interventions are defined as using engagement in occupation as a therapeutic agent of change [6] and are the focus of this review. Refer to Figure 1 for a glossary of key terms referred to in this review.

Two systematic reviews have evaluated occupation-based interventions post stroke [8] and traumatic brain injury [9] on occupational-performance and social participation outcomes. Most studies were delivered in an individual format in outpatient or community-based settings with only $n = 13$ [8] and $n = 1$ [9] delivered in inpatient hospital settings. Each of these reviews defined occupation-based interventions differently, impacting on the types of interventions that were included. Wolf et al. [8] defined occupation-based interventions as using "activities that support performance in the following areas of occupation: ADLs, instrumental activities of daily living (IADLs), rest and sleep, education, work, play leisure, and social participation" [8,10, p. 18]. Powell et al. [9] defined occupation-based interventions as those "in which the occupational therapy practitioner and client collaboratively select and design activities that have specific relevance or meaning to the client and support the client's interests, need, health and participation in daily life" [9, p. 2, 11, p. 672] and also included activity-based interventions defined as goal-directed activities delivered therapeutically to lead to an occupation [9].

Both definitions vary to that of Fisher [6] who identified a failure to consistently use occupation-related terminology throughout occupational therapy literature. This is also congruent with findings from a scoping review by Ford et al. [5] who reviewed how the terms occupation-centred, occupation-based, and occupation-focused are represented in occupational therapy literature. The authors found the terms occupation-based and occupation-focused were often used synonymously and increase the risk of misleading information about how occupation is utilised in practice [5].

Although the perceived benefits of occupation-based interventions are well-established in the profession, the evidence surrounding this intervention remains unclear [12]. Through review of the specific studies included in these systematic reviews [8,9], many interventions did not align specifically with the principles of 'occupation-based' interventions as defined in this systematic review, reinforcing the ambiguity in existing research regarding what constitutes occupation-based interventions. Interventions included multidisciplinary, restorative, mentoring and educational interventions, among others. Furthermore, several studies included multi-component and multidisciplinary interventions which make separating out the effects of a single intervention difficult [13]. The review by Powell et al. [9] concluded that whilst current evidence supports the use of occupation-based and activity-based interventions for patients following traumatic brain injury, there is insufficient evidence to determine which specific intervention approaches or settings would see the greatest benefit with regards to improving occupational performance and social participation. The review by Wolf et al. [8] produced similar findings concluding that evidence supports the use of occupation-based interventions to improve performance of activities of daily living for patients following stroke however, current literature is limited by methodological weaknesses in existing studies. Both studies recommended further research to determine the most effective means of maximising occupational performance outcomes across settings and optimal timing, frequency, and delivery of these interventions [8,9].

To date, no systematic review has reported on the impact of occupation-based interventions in the hospital setting with existing reviews either diagnosis-specific or community-based [8,9, 14]. Additionally, no systematic review has examined the qualitative evidence for occupation-based interventions in the hospital

Term	Definition
Occupations	*The daily activities that people engage in [3].*
Occupation-centred	*Refers to the occupational therapy profession-specific perspective. Acknowledging and maintaining an occupational perspective throughout the entire occupational therapy assessment, intervention, and evaluation process [6].*
Occupation-focused	*Occupation may or may not be the therapeutic intervention however, occupation is the immediate focus of the evaluation or intervention [6].*
Occupation-based	*Using engagement in occupation as a therapeutic agent of change [6].*
Component-focused	*Focusing on remediating or improving the underlying body function and structure components that may be impacting on occupational performance [7].*

Figure 1. Glossary of key terms.

setting, specifically detailing the perceptions and experiences of both patients and clinicians. Qualitative research can enhance understanding of the perceptions and experiences of those involved in designing, delivering, or receiving an intervention and can provide insight into factors that influence successful implementation [15]. Thus, there is a need to identify, describe, and critically review the current evidence for occupation-based interventions in the hospital setting to provide clarity on how occupation-based interventions are being implemented in practice, and the evidence (both quantitative and qualitative) to support this intervention. The objective of this systematic review was to synthesise the current evidence surrounding occupation-based interventions specifically in the hospital setting and their impact on improving occupational performance and participation outcomes. The hospital setting in this systematic review refers to any healthcare facility established and authorised to provide treatment and care to patients [16].

The review was guided by the following research questions:

1. For adults in the hospital setting, do occupation-based interventions change occupational performance and participation outcomes?
2. What are the common features of occupation-based interventions in the hospital setting?
3. What are the experiences and perceptions of clinicians and patients when implementing and receiving occupation-based interventions in the hospital setting?

Methods

Study registration

This systematic review was guided by the PRISMA [17] guidelines in the conduct and reporting of the review. The review was registered with PROSPERO on the 14th August 2022, prior to completing data extraction (CRD42022346707).

Eligibility criteria

The following inclusion criteria were used: (1) articles published in English between 1st January 2000- 31st May 2022; (2) interventions were 'occupation-based' as defined by Fisher [6] (using engagement in occupation as a therapeutic agent of change); (3) interventions were delivered in the hospital setting (acute, subacute or inpatient settings); (4) interventions were either provided or supervised by an occupational therapist; (5) for quantitative studies, at least one measure (either standardised or observational assessment) of occupational performance, participation, and/or quality of life (as these measures often include assessment of participation); and (6) studies of any design.

The following exclusion criteria were used: (1) interventions that were multi-modal where the occupation-based component was not the primary intervention; (2) reviews, grey literature, reports from conference proceedings or non–peer-reviewed publications; and (3) studies unavailable in English text were excluded as no resources to translate studies in another language were available.

Search strategy and selection process

The following databases were searched from March 2022 to May 2022: Medline, CINAHL, Scopus, Web of Science Core Collection and Cochrane Central Register of Controlled Trials. A University of Canberra Librarian was consulted in the development of the search strategy for this systematic review using the population, intervention, comparison, outcome, study design (PICOS) framework. For the full search strategy see supplementary data.

Database searches were uploaded to Endnote and transferred to Covidence where duplicates were removed. The titles and abstracts of the first 20 articles were screened by all four researchers (GW, SI, CP, and LG) to ensure consistency with interpretation of the inclusion/exclusion criteria. Following this, the remaining articles were screened by any two members of the research team (GW, SI, CP, and LG). For articles where it was unclear whether they met the inclusion/exclusion criteria and for any discrepancies, a third reviewer not responsible for screening of that article was involved to resolve conflicts.

Following screening of titles and abstracts, full text articles were retrieved and reviewed by any two members of the research team (GW, SI, CP, and LG). Discrepancies were resolved through discussion with a third reviewer not responsible for screening of that article. Reference lists of included studies were also screened to identify other potentially relevant studies.

Data extraction

One reviewer (GW) collected data on participant demographics (including age and diagnosis), study design, description, and content (including duration, format, and dosage) of the interventions and if applicable experimental controls, outcome measures, outcome data, and any further information required for assessment of risk of bias. A pre-determined data extraction form adapted from The Cochrane Collaboration (retrieved from https://dplp.cochrane.org/data-extraction-forms) was used to guide this process. Thirty percent of the completed data extraction forms were cross-checked by a second reviewer (SI or CP) and disagreements resolved through discussion with a third reviewer. Where data was missing, reviewer GW requested additional data if available from the primary investigator of the relevant studies.

Risk of bias and methodological quality assessment

As studies of any design were included in this review, assessment of risk of bias was undertaken using the appropriate tool for that study design. Risk of bias assessment was independently completed by one reviewer (GW) with 10% co-assessed by a second reviewer (SI) to establish fidelity of the assessment process. Any discrepancies were resolved by consulting a third reviewer.

For RCTs the Physiotherapy Evidence Database (PEDro) scale was used [18]. The PEDro scale is an 11-point scale that has been deemed to be a reliable tool for assessing the internal validity of clinical trials [19]. It is scored out of a possible 10 points with higher scores indicating more superior methodological quality [19]. The first question (relating to external validity of the study) is scored as a "yes or no" response without point allocation [19]. Scores of less than four are considered 'poor', four to five are considered 'fair', six to eight are considered 'good', and nine to ten are considered 'excellent' [19]. If available, scores from the PEDro database were extracted.

For all other studies, the Mixed Methods Appraisal Tool (MMAT) was used [20]. The MMAT was designed to address the challenges of critical appraisal in systematic reviews that include quantitative, qualitative, and mixed methods studies [20]. The MMAT includes two screening questions designed to exclude non-empirical studies from the appraisal process [20]. Reviewers must then select

from five categories of studies, each with their own five items for appraising methodological quality: qualitative research, quantitative descriptive studies, mixed methods studies, randomised controlled trials, and nonrandomised controlled trials [20]. When appraising mixed methods studies, three sets of criteria are assessed: (a) the qualitative set, (b) a quantitative set (either randomized controlled, non-randomized or quantitative descriptive studies), and (c) the mixed methods set [21]. The MMAT has undergone multiple revisions since its design in 2006 to improve its content validity [21]. Whilst a score out of five (fifteen for mixed methods studies) can be generated for each study category, authors recommend that instead reviewers present their ratings from each criterion to better inform the outcome of quality assessment for included studies [20]. The MMAT guide includes an algorithm to assist authors in determining which study category to use in the appraisal process; this algorithm was applied to all studies that were not RCTSs. For any discrepancies regarding selection of the correct study category, the MMAT developers were contacted *via* email to seek clarification.

The level of evidence for each included quantitative study was determined using the National Health and Medical Research Council (NHMRC) Hierarchy of Levels of Evidence Framework (Table 1) [22].

Data synthesis

After considering suitability and feasibility of pooling quantitative data it was determined that meta-analysis would not be appropriate due to the clinical, statistical, and methodological heterogeneity across the included studies. A narrative synthesis was conducted for all studies included in this review (quantitative and qualitative) and quantitative data were summarised descriptively. Narrative synthesis was conducted based on the Economic and Social Research Council's (ESRC) guidance for narrative synthesis [23] (which draws on the Centre for Reviews and Dissemination's (CRD) guidance for undertaking reviews in healthcare [24]). For this review, narrative synthesis involved the following steps: 1) developing a preliminary synthesis of findings, 2) exploring relationships in the data, and 3) assessing the robustness of the synthesis.

Developing a preliminary synthesis of findings

Several tools from the ESRC guidance were used to develop a preliminary synthesis of the findings from studies included in this review. Tabulation was used to synthesise study characteristics for all included studies (participants, interventions, study design, outcomes and statistical findings reported) and risk of bias assessment for all studies were also presented in tabular format (Tables 2–4).

Following this, groupings and clusters were used which involved combining similar information across studies including participants, type and delivery of interventions, hospital setting, outcomes of interest, patient and clinician perspectives and experiences, and levels and strength of evidence. These groupings and clusters were revisited throughout the synthesis process and considered against the research questions for this review.

Table 1. Hierarchy of evidence.

Level of evidence	Definition
Level I	Evidence from a systematic review and/or meta-analysis of randomised controlled trials
Level II	Evidence from at least one randomised controlled trial
Level III-1	Evidence from quasi-randomised controlled trials (alternate allocation or some other method)
Level III-2	Evidence from comparative studies with concurrent controls and allocation not randomised (e.g., cohort study, case-control study, or interrupted time series with a control group)
Level III-3	Evidence from comparative studies without concurrent controls (historical control, two or more single-arm studies, or interrupted time series without a parallel control)
Level IV	Evidence from case series with post-test or pre-test/post-test outcomes

Adapted from: National Health and Medical Research Council (1999).

Exploring relationships in the data

Idea webbing and conceptual mapping were used to help construct groupings and understand relationships emerging from the narrative synthesis, taking into consideration both empirical evidence and qualitative findings.

Assessing robustness of the synthesis

Risk of bias assessment was conducted for all studies included in the review and an overall judgement on the strength of evidence was undertaken for all quantitative studies based on level of evidence and quality assessment. Furthermore, critical discussion amongst the research team regarding the methodology of the synthesis process and potential sources of bias was also undertaken to establish greater credibility of the review findings.

Results

Study selection

The initial search strategy yielded 9128 articles and of these, 4932 duplicates were removed. A total of 4196 titles and abstracts were screened leaving the full texts of 100 potentially suitable articles to be retrieved and reviewed against the eligibility criteria. Sixty-nine studies did not meet the criteria; Figure 2 provides an overview of the screening process including reasons for exclusion of full-text articles. Thirty-three studies were included in the narrative synthesis (an additional two were identified through reference list screening [25,26]). Table 2 provides a summary of the characteristics of each study, outcomes, key qualitative results, and results of measures of occupational performance, participation and/or quality of life. Tables 3 and 4 detail the levels of evidence and risk of bias assessment for each study.

One study [27], appeared to meet the inclusion criteria exploring clinician perceptions on occupational therapy groups for patients following traumatic brain injury. Upon closer review however, this paper did not describe in sufficient detail the types of occupational therapy groups that the clinicians were referring to, making it difficult to determine their perceptions specifically on *occupation-based* group interventions.

Characteristics of included studies

Methodological quality

Of the studies included in this review 12 studies provided Level II evidence [25,28–38], two studies provided Level III-2 evidence [39,40], 11 studies provided Level III-3 evidence [41–51] (two of which were mixed methods designs [44,49]), three provided Level IV evidence [52–54], and five were qualitative study designs [26,55–58].

Table 2. Summary of included studies: participants, interventions, outcome measures and results ($n = 33$).

Author/Year/Country/ Study design	Diagnosis, n (%)/ Age, mean (SD)	Sample size	Intervention	Control	Occupational performance and/or participation outcomes	Results
Arsh et al. 2020[a] [41] Pakistan Prospective quasi-experimental, single group, pre-test post-test	SCI = 72 (100%) Mean age = 30.21(13.52)	$n = 72$	ADL retraining including feeding, bathing, dressing and grooming practice with adaptive aids as required as well as UE exercises (strengthening, resistance, and fine motor tasks). **Setting:** Inpatient SCI rehabilitation **Duration:** 6 weeks **Intensity:** 2 × 45–60-minute sessions, 3 days per week **Provider(s):** OT	N/A	SCIIM (self-care domains)	Improvements in each self-care domain (feeding, upper body dressing, lower body dressing, grooming) and total SCIM change scores ($p < 0.001$).
Bertilsson et al. 2014[a] [28] Sweden Multicentre RCT	Stroke = 153(100%) Mean age = Inpatient unit 1 IG = 77 (7.5) CG = 69 (11.5) Inpatient unit 2 IG = 59 (6.0) CG = 56 (10.4)	Total inpatients $n = 153$ Inpatient IG $n = 89$ Inpatient CG $n = 64$	CO-OP approach in addition to usual care. **Setting:** Geriatric and medical inpatient rehabilitation units and 1 x outpatient setting **Duration:** Dependant on goal achievement and discharge **Intensity**: Not specified **Provider(s):** OT	ADL therapy as per the routine practice of each rehabilitation unit. **Setting:** Geriatric and medical inpatient rehabilitation units and 1 x outpatient setting. **Duration:** Dependant on goal achievement and discharge **Intensity:** Not specified **Provider(s):** OT	BIPersonal and Instrumental ADL (KE) SISOGQ	No between-group difference for the BI, KE, SIS, and OGQ change scores ($p > 0.05$).[b]
Christie et al. 2011 [42] Australia Retrospective quasi-experimental single group pre-test post-test	Stroke = 119(100%) Mean age = 74.3(12.3)	$n = 119$	Twice weekly dressing group in addition to usual care. Supervised by 2 x OTs. Goals focused on outer clothing layers to maintain dignity. Goal setting, multiple repetitions, and feedback were used to maximise performance. Groups of 2–10 participants. **Setting:** Inpatient stroke rehabilitation **Duration:** Goal and discharge dependant. On average participants attended 4.0 (SD 3.8) group sessions **Intensity:** 2 × 1 h group sessions per week **Provider(s):** OT	N/A	FIM upper body and lower body dressing items.	Patients who practiced upper body dressing ($n = 108$) had a mean FIM change score of 2.2 (95% CI 1.9–2.5, $p = 0.0001$). Patients who practiced lower body dressing ($n = 82$) had a mean FIM change score of 2.7 (95% CI 2.3–3.1, $p = 0.0001$). Patients who practiced both upper body and lower body dressing ($n = 71$) had a mean FIM change score of 5.2 (95% CI 4.5–6.0, $p = 0.0001$).
Cox et al. 2014[a] [43] Australia Prospective quasi-experimental cohort study using historical controls	Neurological = 17 (42.5%) Orthopaedic = 7 (17.5%)Lower limb amputation = 6 (15%) Other = 10(25%) Mean age = IG = 70.2(15.46) CG = 63.43(12.71)	$n = 70$ IG = 30 CG = 40	Occupation-based groups including breakfast, lunch or afternoon tea preparation and domestic training (cleaning and laundry). Groups followed a standardised process with written procedures. Groups of 2–6 participants. Time was also allocated to organise group therapy referrals, allocate patients to groups, and feedback to treating clinicians in the team meeting held on that ward. **Setting:** Geriatric and rehabilitation unit **Duration:** Dictated by goal achievement. **Intensity:** 1–2 h per group with up to 6 running per week **Provider(s):** Advanced AHA (with more than 10 years' experience)	Same procedure as the intervention group with the exception that it was OT-led not AHA-led. **Setting:** Geriatric and rehabilitation unit **Duration:** Dictated by goal achievement **Intensity:** 1–2 h per group with up to 6 groups per week **Provider(s):** OT	FIM	Both groups improved in functional independence (f(1) = 79.56, $p < 0.001$). No between-group difference for OT vs AHA-led groups (f(1,136) = 0.53, $p = 0.47$).
De Vos & Leclair, 2019 [44] Canada Convergent parallel mixed methods	Schizophrenia = 16 (26.7%)Bipolar = 15 (25.0%) Depression = 8 (13.3%)Other = 10 (16.7%)Not reported = 11 (18.3%) Mean age =36.64(15.80)	$n = 60$	Food skills group with maximum for 4 participants per group. Sessions included using a written recipe, cooking the meal, sharing the meal at a table with modelling of social interactions, and then cleaning up the kitchen. Verbal cueing and demonstration provided dependent on patient performance **Setting:** Inpatient psychiatric hospital **Duration:** Goal and discharge dependant **Intensity:** 60–120 min in length. 2 x food skills groups ran per week, patients participated in 1 of these each week **Provider(s):** OT	N/A	Self-developed 15 item questionnaire with 5-point Likert Scale rating enjoyment, confidence, motivation to re-attend, and social benefits. Semi structured interviews with $n = 20$ participants.	>80% participants reported they were satisfied with the food skills group, the group provided opportunity to improve their cooking and social skills and prepare for discharge, and felt the group was important to their recovery. Three main themes emerged from qualitative analysis: 1) importance of engaging/doing; 2) connections with food, and 3) being involved in a group process.

(*Continued*)

Table 2. Continued.

Author/Year/Country/ Study design	Diagnosis, n (%)/ Age, mean (SD)	Sample size	Intervention	Control	Occupational performance and/or participation outcomes	Results
Eyres & Unsworth, 2005 [29] Australia Pilot RCT	General surgical conditions = 15 (100%) Mean age = CG = 78.1(5.79) IG = 81(8.25)	*n* = 15 CG = 8 IG = 7	Daily 1:1 ADL practice including self-care and instrumental ADLs such as cooking, laundry, café visits and functional and community mobility practice. In addition to usual care. **Setting:** Acute **Duration:** Goal and discharge dependant **Intensity:** 1–2 h per day- influenced by the nature of the acute setting with many competing demands **Provider(s):** OT and AHA	Usual care consisted of allied health input if/as needed dependant on nursing staff referrals. **Setting:** Acute **Duration:** Not reported **Intensity:** Not reported **Provider(s):** OT and other allied health as required (referral-based)	FIMLSI	Improved FIM scores for both groups (CG: t(7) = −3.567, $p = 0.009$, IG: t(6) = −10.802, $p = 0.000$). No statistically significant changes in LSI for IG or CG.Between-group differences not calculated due to small sample size.
Fletcher-Smith et al. 2012 [45] England Prospective quasi-experimental, single group, pre-test post-test	Stroke with cognitive impairment = 70(100%) Mean age = Left paresis: 77(11) Right paresis: 76(13)	*n* = 70 Left paresis = 42 Right paresis = 28	1:1 upper body dressing retraining. Program consisted of functional approaches including teaching one-handed dressing, problem solving through task practice and repeated practice alongside cognitive approaches such as errorless learning and visual scanning techniques. **Setting:** Acute stroke unit **Duration:** 6-weeks **Intensity:** 3 x sessions per week. Timing not reported **Provider(s):** OT	N/A	NSDA upper body scores (minus scores for fastenings)Dressing dependence = <100% on NSDA.	Participants completing bimanual dressing were more likely to be independent in dressing at follow-up ($p < 0.001$). Of the participants dependant on dressing at baseline, 57% of participants in the bimanual group achieved independence at follow-up and 23% of the unimanual group achieved independence at follow-up.
Guidetti et al. 2010[a] [25] Sweden Pilot RCT	Stroke = 40(100%) Mean age = CG = 69(15) IG = 66(14)	*n* = 40 CG = 21 IG = 19	CO-OP approach in addition to usual care for self-care retraining. **Setting:** Geriatric, medical, and neurological rehabilitation units **Duration:** Dependant on goal achievement and discharge **Intensity:** Not reported **Provider(s):** OT	Self-care retraining dependant on the routine practice of each rehabilitation unit. **Setting:** Geriatric, medical, and neurological rehabilitation units **Duration:** Dependant on goal achievement and discharge **Intensity:** Not reported **Provider(s):** OT	BIFIM ADL and motor itemsSIS	No between-group differences across all outcome measures between IG and CG ($p > 0.05$). Both groups improved on FIM ADL and motor items ($p < 0.05$).[b]
Gustafsson & McKenna, 2010 [51] Australia Prospective exploratory study	Stroke = 20(100%) Mean age = Unit A69(10.7) Unit B 68.1(8.9)	*n* = 20 Unit A (IG)= 8 Unit B (CG) = 12	Occupation-based 'life-skills' groups in addition to usual care. Groups consisted of a daily breakfast group, daily life skills group, and a weekly community shopping group. **Setting:** 2 x general rehabilitation units **Duration:** Not reported **Intensity:** Not reported **Provider(s):** OT and AHA	Largely individual therapy (usual care) with a weekly recreational cooking group. **Setting:** 2 x general rehabilitation units. **Duration:** Not reported **Intensity:** Not reported **Providers:** OT (no AHAs)	SISModified BI	Both groups improved ($p < 0.001$) on the modified BI with no between-group differences ($p = 0.60$). Reduced social participation (SIS) that decreased at follow-up ($F = 9.94$, $p = 0.01$) for Unit A.
Haley & McKay, 2004 [26] England Qualitative study	Acute mental health conditions = 12 (100%) 21–64 years (only range reported)		Baking group involving planning, preparation, eating, and clean-up of cake or biscuits. **Setting:** Acute mental health **Duration:** Not reported **Intensity:** Not reported Participants attended an average of 2 x baking groups **Provider(s):** OT	N/A	Semi-structured interviews with *n* = 12 participants	The baking group provided participants with a sense of accomplishment, was an avenue to develop social connections, and provided them with structure and purpose for their day. Participants were more likely to attend if they felt no pressure during the group and preferred afternoon groups. Participants did not feel that their feedback would result in changes to the group.
Hee-Su & Deok-Ju, 2021 [30] Korea RCT	Stroke = 30(100%) Mean age = CG = 65.27(12.73)IG = 65.20(12.17)	*n* = 30CG = 15 IG = 15	ADL-based dual task training (20 min) and conventional OT (10 min). Dual task combined an ADL with either an attention or executive functioning task. ADL activities included climbing stairs, making tea or coffee, folding tops or bottoms, buttoning /unbuttoning shirts and moving beans. **Setting:** Inpatient stroke rehabilitation **Duration:** 5-weeks **Intensity:** 30-minute sessions, 5 days per week **Provider(s):** OT	Non-ADL-based single task training (20 min) and conventional OT (10 min). The single tasks consisted of sensory stimulation training on the paralysed side, UE muscle strength training, cognitive and perceptual training, and fine hand movement using tools. **Setting:** Inpatient stroke rehabilitation **Duration:** 5-weeks **Intensity:** 30-minute sessions, 5 days per week **Provider(s):** OT	WHOQOL-BREF	Improvement across all domains of the WHOQOL-BREF for both IG and CG ($p < 0.01$) with significant between group difference (IG > CG) (z=-3.596 $p = 0.000$).

Hiraga et al. 2021 [39] Japan Non-RCT	High tibial osteotomy = 31 (100%) Mean age = CG = 68.0(1.8) IG = 67.2(2.3)	*n* = 31CG = 17 IG = 14	OT treatment commenced 3-weeks post-surgery. Goal setting was undertaken using the COPM. Each goal was progressed based on patient capacity and involved repeated and/or graded practice of the activity until the goal was achieved (additional to usual care). **Duration:** Dependant on discharge (minimum 2-weeks) **Intensity:** 20–40 min daily **Setting:** Inpatient rehabilitation **Provider(s):** OT	All patients followed the same rehabilitation protocols after surgery (both IG and CG). Physical therapy began day 1 post-operation. Approximately 3-weeks post-surgery, walking using a walker was possible. Approximately 5-weeks post-operation, walking with a cane or alone was possible, and the patient was discharged. **Duration:** Dependant on discharge (minimum 5-weeks) **Intensity:** 40-minutes of physical therapy daily **Setting:** Inpatient rehabilitation **Provider(s):** PT	COPM- IG only	Improved COPM performance (2.6 SD1.6 [baseline] to 8.0 SD1.2 [follow-up]) and satisfaction (2.0 SD1.3 [baseline] to 8.0 SD1.3 [follow-up]). $p < 0.01$.
Kasprzyk & Kruk, 2020 [46] Poland Prospective, quasi-experimental single group pre-test post-test	Stroke = 10(100%) Mean age =70.3	*n* = 10	3 x OT visits to assess feeding performance, set-up adaptive wristband, and encourage 1-week of independent task practice and then reassessment of feeding. **Duration:** 2-weeks **Intensity:** Timing not reported **Setting:** Inpatient rehabilitation **Provider(s):** OT	N/A	COPMTime taken to finish a meal (mins)	Improved COPM performance (6.7 SD1.34 [baseline] to 7.80 SD0.63 [follow-up]) $p = 0.03$ and satisfaction (4.90 SD0.99 [baseline] to 7.50 SD0.97 [follow-up]) $p = 0.005$.
Kelly & Nikopoulos, 2010[a] [52] England Multiple baseline probe case series	TBI = 2(100%) Ages = 47 and 58	*n* = 2	Combined errorless learning and strategy training during self-care retraining. Included use of verbal or gestural prompting, demonstration or concurrent imitation, physical assistance, forward/backward chaining, whole-task training, repetitive practice, feedback, visual prompts, and environmental adaptation or modifications. **Duration:** 8 x sessions for participant 1. 25 x sessions for participant 2 **Intensity:** 30-minute sessions. 2–3 sessions on any one day for each participant Monday-Friday **Setting:** Acute neurosurgical unit **Provider(s):** OT	N/A	FIM%mean(range) of assistance required (verbal, gestural and physical)AMPS	Clinically significant improvements in AMPS process score (0.51 logits) and clinically meaningful improvements in the AMPS motor score (0.31 logits) for Participant 1. Participant 1 improved by 4 points in FIM motor score and 1 point in FIM cognitive score. Clinically significant increase in FIM motor score (18 points) was observed for Participant 2. Nil change in FIM cognitive score. Statistically significant decrease in the AMPs process scores for Participant 2 (0.93 logits). Participant 2 decreased in AMPS motor score as well (0.03 logits).
Khanipour et al. 2022 [31] Iran RCT	Hand and upper extremity burns = 20(100%) Mean age = CG = 40.5(12.14)IG= 43(11.47)	*n* = 20CG = 10 IG = 10	Both groups received traditional rehabilitation for the first two weeks. For the IG this was followed by the CO-OP approach. **Duration:** 6-weeks **Intensity:** 3 × 45-minute sessions per week **Setting:** Specialised burns rehabilitation hospital **Provider(s):** OT	Traditional rehabilitation, including motor exercises, strengthening, stretching, scar massage, oedema control, and splints, pressure gloves, burns clothes or silicone sheets. **Duration:** 6-weeks **Intensity:** 3 × 45-minute sessions per week **Setting:** Specialised burns rehabilitation hospital **Provider(s):** OT	COPM	Both CG and IG improved in COPM performance and satisfaction ($p < 0.0001$). No between group difference.
Kim & Park, 2019 [32] Korea RCT	Stroke = 20 (100%) Mean age = CG = 61.7(7.40) IG = 57.3(9.00)	*n* = 20CG = 10 IG = 10	Occupation-based activities including folding clothes, bathing, make-up application, ironing, hand washing, car washing, sport, dressing, cooking, cleaning, cross-stitching, computer work, woodwork, craft, sewing, and knitting dependant on identified goals. Also received conventional physical therapy. **Duration:** 4-weeks **Intensity:** 30-minute sessions, 5 days per week **Setting:** Inpatient rehabilitation **Provider(s):** OT	Task-based, bilateral UE training including wiping desks, drinking, moving blocks, cup stacking, and peg activity. Also received conventional physical therapy **Duration:** 4-weeks **Intensity:** 30-minute sessions 5 days per week **Setting:** Inpatient rehabilitation **Provider(s):** OT	COPMSIS	Between group difference (IG > CG) for COPM performance ($p = 0.01$, η2 = .44) and COPM satisfaction ($p = 0.00$, η2 = .72). Between group difference (IG > CG) for SIS ADL/instrumental ADL ($p = 0.002$, η2=.45). Between group difference (IG > CG) for SIS participation ($p = 0.001$, η2 = .47).

(*Continued*)

Table 2. Continued.

Author/Year/Country/ Study design	Diagnosis, n (%)/ Age, mean (SD)	Sample size	Intervention	Control	Occupational performance and/or participation outcomes	Results
Landi et al. 2006 [47] Italy Prospective exploratory study	Stroke = 50 (100%) Mean age = CG = 74.9(10.9) IG = 78.3(9.4)	n = 50CG = 25 IG = 25	Combined OT/PT intervention. 1:1 self-care retraining (OT-led) included showering, toileting, feeding and dressing practice. During retraining OTs also assessed for the need for adaptive equipment. Delivered in addition to usual care. **Duration:** 8-weeks **Intensity:** 3-hours per day **Setting:** Geriatric rehabilitation unit "CEMI-3" **Provider(s):** OT, PT	PT input only including functional mobility training, progressive gait training, neuromuscular re-education, muscle tone management, contracture prevention and treatment. **Duration:** 8-weeks **Intensity:** 3-hours per day **Setting:** Geriatric rehabilitation unit "CEMI-2" **Provider(s):** PT	ADL scale	Between group difference (IG > CG) for ADL scale dressing (p = 0.01) and personal hygiene (p = 0.005).No significant between group differences were observed for toileting or eating change scores.
Mew, 2010 [33] Australia Pilot RCT	Stroke = 5(100%) Mean age = CG = 77.5 IG = 73	n = 5CG = 3 IG = 2	Dressing practice focused on achieving independence using compensatory strategies, environmental adaptations and aids as well as using the Bobath concept. **Duration:** Up to 8-weeks **Intensity:** 3 x per week. No set time however the participant averaged 20-minutes per session **Setting:** Acute rehabilitation unit **Provider(s):** OT	Dressing practice using the Bobath concept. Some sessions were co-run by PT due to overlapping nature of LB dressing. **Duration:** Up to 8-weeks **Intensity:** 3 x sessions per week. No set time but recorded sessions ranged from 45–57-minutes on average **Setting:** Acute rehabilitation unit **Provider(s):** OT/PT	NSDACOPM	No between group difference for NSDA and COPM change scores. All patients improved in dressing independence from baseline to discharge.
Ngooi et al. 2021 [55] Singapore Qualitative descriptive methodology	Depressio n = 2 (33.3%)Psychotic disorder = 2(33.33%) PTSD = 1 (16.66%) Adjustment disorder = 1(16.66%) Mean age = 40.66	n = 6	Structured, activity-based group program based on 5 main themes: 1) physical activity; 2) art creation; 3) utilizing technology games and apps; 4) meal preparation; and 5) music making. Attendance was voluntary but participants were encouraged to attend as part of their daily routine. **Duration:** Dependant on LOS **Intensity:** 1-hour daily every weekday **Setting:** Acute psychiatric hospital **Provider(s):** OT	N/A	Semi-structured interviews with each participant	Three major themes of benefits of participation in activity-based groups emerged from the interviews: 1) the therapeutic relationship, 2) connection with others, and 3) opportunity to engage.
Nilsson & Nygard, 2003 [56] Sweden Qualitative approach using Grounded Theory	Stroke = 3 (100%) 66–85 (only range provided)	n = 3	Group-based. Each participant had individual goals which were determined by the therapist and patient together. The therapeutic activities embraced both creative activities, e.g., painting and pottery, and household activities, e.g., preparing light meals. All activities were continually adapted to meet the capacities and interests of the participants. **Duration:** 16 days **Intensity:** 5 sessions **Setting:** Inpatient rehabilitation **Provider(s):** OT	N/A	5 x semi-structured interviews with each of the 3 participants (following participation in each of the 5 group sessions).	Themes described experiences of creativity, pleasure and supportive conditions that promoted learning, gaining new insights into ones' abilities, and developing strategies and adaptations to discharge home.
Patil et al. 2019 [57] Norway Qualitative descriptive methodology	OT = 4 working with stroke survivors(100%) Mean age N/A	n = 4	Gardening group. Activities adapted to each patient with respect to their skills, motivation, and capacity. Led by 3 x OTs. Horticultural activities included propagating plants, potting, planting, watering, composting, and harvesting. **Duration:** Varied **Intensity:** 1–1.5 h per session, twice weekly **Setting:** Acute stroke unit **Provider(s):** OT	N/A	Notes written by all four OTs immediately following each group session implemented (49 sessions of which more than 50 patients had participated in).	Six themes were identified: possibilities for skills training, engagement in occupation, mastery of the activity, finding mental rest, connection to past experiences, and shared experiences and hope.

Patterson et al. 2017 [53] Australia Observational cross-sectional study	TBI = 35(100%) Mean age =38(14.1)	*n* = 35	4 x different groups: twice weekly breakfast group, twice weekly lunch group twice weekly community access, thrice weekly upper limb group and 6 x weekly cognitive rehabilitation group. Frequency of each group was adjusted to reflect patient needs at the time.Referrals come from treating OTs including goals and other clinically relevant information. Group outline documents guide facilitators to plan and structure the groups; content is not manualised to allow for flexibility based on patients' individual goals. 3–4 participants in each group. **Duration:** Varied **Intensity:** 1-hour sessions throughout the week as above **Setting:** Inpatient rehabilitation **Provider(s):** OT, AHA, recreation officers and OT students	N/A	Self-developed, 7 item, 4-point Likert scale to explore attitudes towards various aspects of the groups. Responses for occupation-based groups vs. impairment focused groups were explored using Z-scores.	92.8% strongly agreed or agreed that the groups were useful. 86.7% of participants strongly agreed or agreed that the groups were specific to their needs. The proportions of participants who disagreed or strongly disagreed with the group being specific to their needs were higher for the cognitive groups (21.4%) and community access groups (20.0%), compared to the upper limb (9.1%) and meal preparation (3.4%) groups. 86.7% of participants agreed or strongly agreed that groups provided them with opportunity to practice skills they were learning. There were no significant differences in responses between occupation-based and impairment-focused groups based on Z-score calculations.
Patterson et al. 2019 [58] Australia Qualitative phenomenological design	TBI = 15(100%) Mean age =37.9(13.6)	*n* = 15	Four groups are facilitated multiple times per week. Utilised formal processes for referral, goal setting, participation, and evaluation. See Patterson et al. [53] for further details (same intervention). **Duration:** Varied **Intensity:** Not reported- refer to Patterson et al. [53] study for further details **Setting:** Inpatient rehabilitation **Provider(s):** OT- refer to Patterson et al. [53] study for further details	N/A	Semi-structured interviews with *n* = 15 participants	3 key themes: 1) feeling normal, comfortable, and connected, 2) learning by doing, seeing, and sharing, 3) practicalities of groups and recommendations.
Pillastrini et al. 2008 [40] Italy Non-RCT	SCI = 36(100%) Mean age = CG = 32.5(12.58) IG = 31.96(8.29)	*n* = 36 CG = 12 IG = 24	OT intervention 5-weeks before discharge in addition to neuromotor rehabilitation. OT sessions ranged from kitchen tasks, bed transfers, self-care, and car transfers. **Duration:** 5-weeks **Intensity:** 2 × 60-minute sessions, 5 days per week (2 x OT sessions, 8 x neuromotor rehabilitation sessions) **Setting:** Inpatient rehabilitation **Provider(s):** OT, PT	Neuromotor rehabilitation consisting of reflex inhibiting postures, mobilisations, exercises of the trunk and lower limbs and PNF. **Duration:** 5-weeks **Intensity:** 2 × 60-minute sessions, 5 days per week (10 neuromotor rehabilitation sessions) **Setting:** Inpatient rehabilitation **Provider(s):** PT	VFM	Between-group difference for wheelchair transfers ($p = 0.000$), wheelchair use ($p = 0.005$), and total ($p = 0.007$) change scores on the VFM.No significant between-group difference for remaining items on the VFM (bed mobility, grooming/bathing, dressing and social life).
Shearer & Guthrie, 2013 [48] Australia Non-RCT	Dementia = 13 (27.0%) No dementia = 35 (72.9%) Mean age = CG = 85.9(5.2) IG = 87.1(6.4)	*n* = 48 CG = 26 IG = 22	ADL retraining including personal ADLs, simple domestic tasks (e.g., hot or cold drink preparation, toast preparation) and functional mobility. **Duration:** Not reported **Intensity:** 3 x per week, ~1-hour per session **Setting:** Acute geriatric unit **Provider(s):** OT, AHA	Usual occupational therapy which included assessment of occupational performance, discharge planning and occasional re-assessment of occupational performance. No ADL retraining. **Duration:** Not reported **Intensity:** Not reported **Setting:** Acute geriatric unit **Provider(s):** OT	Modified BIProgress notes from AHA regarding progress and level of assistance during ADL retraining	No significant between-group difference on any item or total change score on the modified BI. AHA progress notes indicated progress towards ADL goals including progressing from sitting to standing for showering and dressing, attempting higher levels of washing, drying, or dressing, and progress with mobility.
Skidmore et al. 2011 [54] United States of America Case report	Stroke = 1(100%) Age =31	*n* = 1	CO-OP approach in addition to usual rehabilitation (5–6-hours of OT/PT/SP per weekday and 2–3-hours on Saturdays). **Duration:** 14 days **Intensity:** 1 × 45-minute session per day, 5 days per week **Setting:** Inpatient rehabilitation **Provider(s):** OT	N/A	FIMPASS	Clinically meaningful change in FIM score (baseline = 68/100; discharge = 97/100). Clinically meaningful change in PASS score (baseline = 1.1/3; discharge = 2.9/3).

(*Continued*)

Table 2. Continued.

Author/Year/Country/ Study design	Diagnosis, n (%)/ Age, mean (SD)	Sample size	Intervention	Control	Occupational performance and/or participation outcomes	Results
Timmer et al. 2020 [34] Australia RCT	Reconditioning for older adults = 100(100%) Mean age = CG = 81(7) IG = 80(8)	*n* = 100 CG =49 IG = 51	Activity pacing intervention including occupation-centred (Wii sport, Wii balance, puzzles, mobility practice) and occupation-based (bed making, hanging washing, bowling, golf, gardening, shopping) activities. In addition to usual OT intervention. **Duration:** 9 days commencing 3 days post admission **Intensity:** 1 × 30-minute education session day 1 and day 9. 5 x consecutive 45-minute group sessions in-between **Setting;** Inpatient rehabilitation **Provider(s):** OT	Usual OT consisting of occupational performance assessment, interventions to facilitate safe discharge home and return to desired occupations. Patients received 1 x activity pacing education session. **Duration:** Not reported **Intensity:** 1 × 45-minute pacing education session in addition to usual care **Setting;** Inpatient rehabilitation **Provider(s):** OT	AusTOMs-OT impairment and activity limitation scales 1, 4, 7, 8, participation restriction and distress/well-being items.	Improvements in activity limitation, participation, and well-being items from admission to discharge ($p < 0.05$) for CG and IG. Significant between-group difference for activity limitation scale 4: carry out daily life tasks and routines (F(1.96 (=4.125, $p = 0.045$, η^2 =0.41) (IG > CG). Data from 3-month follow-up should be interpreted with caution due to significant loss of participants (retention rate of 64%).
Tomori et al. 2015 [35] Japan RCT	Stroke = 54 (100%) Mean age = CG= 64.19(10.16)IG = 68.26(10.9)	*n* = 54 CG= 27 IG =27	1:1 occupation-based practice e.g., using chopsticks to eat food, cooking, self-cares, and knitting. More than two thirds of the intervention time was allocated to occupation-based practice and the remaining third was for basic function exercises and simulated occupational practice. **Duration:** Goal and discharge dependant **Intensity:** Up to 3-hours per day between OT/PT/SP therapy dependant on patient goals and needs **Setting:** Inpatient rehabilitation **Provider(s):** OT	1:1 impairment-based therapy focused on restoring capacities e.g., PNF, strengthening exercises and cognitive training. Two thirds of therapy time was dedicated to impairment-based therapy with the remaining third dedicated to occupation-based practice. **Duration:** Goal and discharge dependant **Intensity:** Up to 3-hours per day between OT/PT/SP therapy dependant on patient goals and needs **Setting:** Inpatient rehabilitation **Provider(s):** OT	FIM	No between group difference between IG and CG ($p > 0.05$). Significant ($p < 0.05$) improvements in the FIM change scores. (CG $p = 0.00005$ 95% CI = −19.81–−8.38; IG $p = 0.0001$, 95% CI= −17.37–−6.88) for CG and IG.
Trevena-Peters et al. 2018 [36] Australia RCT	TBI in PTA =104(100%) Mean age = CG= 40.24(19.06)IG= 45.78(19.64)	*n* = 104CG= 55 IG =49	Treatment as usual with additional manualised ADL retraining based on errorless learning principles. Included initial functional assessment, task analysis, goal setting using the GAS and individual retraining program. Simple ADLs such as self-feeding would be addressed first, followed by other personal ADLs and then basic meal preparation in accordance with participant progress. **Duration:** Duration of PTA **Intensity:** Not reported. Participants completed a mean of 15.39 ± 14.51 sessions during PTA (range 2–63) **Setting:** Inpatient rehabilitation **Provider(s):** OT	Treatment as usual comprised of daily PT and/or SP during PTA. All participants received comprehensive rehabilitation following emergence from PTA including OT input. **Duration:** Duration of PTA **Intensity:** Not reported **Setting:** Inpatient rehabilitation **Provider(s):** PT, SP	FIM	Post hoc analyses demonstrated greater FIM change between baseline and PTA emergence ($p = 0.001$) for IG that maintained at discharge ($p = 0.001$). No significant between group differences at 2-month follow-up.
Trevena-Peters et al. 2019[c] [49] Australia Mixed methods (Retrospective single group pre-test, post-test and qualitative study)	TBI in PTA = 49 (100%) Mean age =45.78(19.64) OTs= 4(100%)	TBI *n* = 49 OTsn= 4	See Trevena-Peters et al. [36] (same intervention). **Duration:** Duration of PTA **Intensity:** Up to 60-minutes each weekday **Setting:** Inpatient rehabilitation **Provider(s):** OT	N/A	FIMGASSemi-structured interviews with *n* = 4 OTs	Improvement in GAS scores at PTA emergence (t(41) = 15.18, p<.001, $d = 3.91$ CI [4.64, 3.15]).Strong correlation between GAS t-scores and FIM change (baseline to PTA emergence) ($r = 0.52$, $p < 0.001$).9 themes emerged from semi-structured interviews. The intervention improved independence, helped build a therapeutic relationship, and enhanced engagement. Manualised design provided structure and guidance however, OTs also questioned whether it was limiting the scope of potential ADLs that could have been targeted. Fatigue was biggest barrier to implementation.

Udovicich et al. 2020 [50] Australia Retrospective single group pre-test, post-test	Cancer = 31 (100%) Mean age =71.61(12.57)	$n=31$	Domestic ADL group intervention consisting of task-based retraining and education targeting meal preparation. Maximum of 3 patients per group. **Duration:** 1 × 60-minute group **Intensity:** 60-minutes **Setting:** Acute cancer centre **Provider(s):** OT	N/A	COPM	Improved ($p<0.02$) COPM performance (95% CI 6.156–8.054) and satisfaction (95% CI 3.490–5.769).
Vanderploeg et al. 2008 [37] United States of America RCT	TBI = 360(100%) Mean age = CG= 33.2(13.5) IG= 31.7(12.9)	$n=360$CG = 180 IG = 180	Functional-experiential intervention received a group-based program consisting of occupation-based practice using errorless learning. Activities included newspaper reading and TV watching, daily planning, card games, sports, cooking, shopping, cleaning, exercise, and prevocational tasks such as interviews and giving speeches. More complex tasks were added as patients achieved mastery of simpler ones. In addition to usual care. **Duration:** 20–60 days dependant on LOS and goal attainment **Intensity:** 1.5–2.5-hours every weekday with additional 2–2.5 h of daily OT/PT **Setting:** Acute **Provider(s):** OT	Cognitive-didactic intervention was 1:1 and impairment-based. Participants practiced progressively more difficult paper-and-pencil or computerized cognitive tasks targeting attention, memory, executive function and/or pragmatic communication. Error-based learning was used to try and build self-awareness. In addition to usual care. **Duration:** 20–60 days dependant on LOS and goal attainment **Intensity:** 1.5–2.5 h every weekday with additional 2–2.5-hours of daily OT/PT **Setting:** Acute **Provider(s):** OT	Self-reported return to work/ schoolFunctional independence (ability to live independently with <3hours per week of services)FIM	No significant between group difference at 1 year follow-up for return to work and functional independence outcomes. Significant improvement in the cognitive items on FIM for cognitive-didactic intervention compared with the functional-experiential at completion of the intervention ($t332=2.56$, $p=0.01$). No between group difference for FIM motor items at completion of the intervention.
Yoshida et al. 2019 [38] Japan RCT	Cerebral or spinal disease = 30(41.7%) Musculoskeletal disease = 42(58.3%) Mean age = CG= 75.17(9.99) IG = 74.11(11.73)	$n=72$CG = 36 IG = 36	Began with goal setting (COPM) and assessment of occupational performance. Clients rated the challenge and skill required to perform the task on a 7-point Likert scale. ADL practice was then continued with the OT adjusting the challenge of each task using compensatory approaches, environmental adjustments, or assistive devices if necessary. Clients continued to re-evaluate the challenge and skill level of each activity following any adjustments from the OT. Activities practiced included upper limb and movement, eating, dressing, toileting, showering, walking, cleaning, laundry, meal preparation, shopping, driving and work. **Duration:** Dependant on LOS **Intensity:** Not reported **Setting:** Inpatient rehabilitation **Provider(s):** OT	Usual OT including goal setting with the COPM and assessment of occupational performance. Based on this assessment the OT provided therapy in accordance with the general guidelines of occupational therapy practice. **Duration:** Dependant on LOS **Intensity:** Not reported **Setting:** Inpatient rehabilitation **Provider(s):** OT	FIMReturn to school/work (%) Living independently in the community (<3 h of weekly home-help) (%)	Both groups improved on FIM with no between group difference ($t(354)=0.89$, $p=0.37$). No between group difference for return to work/school and living independently in the community at 1-year follow-up.

ADLs: Activities of daily living; AHA: Allied Health Assistant; AMPS: Assessment of Motor and Process Skills; APA: Activity Pacing Assessment; AusTOMs-OT: Australian Therapy Outcome Measures- Occupational Therapy; BI: Barthel Index; CG: Control group; CO-OP: Cognitive Orientation to daily Occupational Performance; COPM: Canadian Occupational Performance Measure; CI: Confidence Interval; FIM: Functional Independence Measure; GAS: Goal Attainment Scale; IG: Intervention group; LIS: Life Satisfaction Index: LOS: Length of stay; NSDA: Nottingham Stroke Dressing Assessment; OGQ: Occupational Gaps questionnaire; OT: Occupational Therapist/Occupational Therapy; PASS: Performance Assessment of Self-Care Skills; PT: Physical Therapist; PTA: Post Traumatic Amnesia; PTSD: Post Traumatic Stress Disorder; PNF: Proprioceptive Neuromuscular Facilitation; RCT: Randomised Controlled Trial; SCI: Spinal Cord Injury; SCIIM: Spinal Cord Injury Independence Measure; SIS: Stroke Impact Scale; SP: Speech Pathology; TBI: Traumatic Brain Injury; UE: Upper Extremity; VFM: Valutazione Funzionale Mielolesi scale; WHOQOL-BREF: World Health Organisation Quality of Life- BREF.

[a]Additional statistical data or intervention information was unavailable, or no response was received from the corresponding author.

[b]Participants were followed up at 3-months only. Their outcome measures were not reported upon discharge from the rehabilitation units with some patients continuing the intervention with an outpatient service. As a result, these outcomes reflect a component of outpatient therapy for a proportion of the sample.

[c]Study conducted additional analysis of trial data.

Table 3. Level of evidence and quality assessment scores for included RCTs using the PEDro scale ($n = 12$).

Study	Level of evidence	Eligibility criteria specified	Random allocation	Concealed allocation	Baseline similarities	Subject blinding	Therapist blinding	Assessor blinding	Adequate follow-up (>85%)	Intention to treat analysis	Between-group statistical comparisons provided	Point measure and variability provided	Score (0–10)[a]
Bertilsson et al. 2014[b] [28]	II	✓	✓	X	✓	X	X	✓	✓	✓	✓	✓	7/10
Eyres & Unsworth, 2005 [29]	II	✓	✓	✓	✓	X	X	✓	✓	✓	X	✓	7/10
Hee-Su & Deok-Ju, 2021 [30]	II	✓	✓	✓	✓	X	X	X	✓	✓	✓	✓	7/10
Guidetti et al. 2010 [25]	II	✓	✓	✓	✓	X	X	✓	X	✓	✓	✓	7/10
Khanipour et al. 2022 [31]	II	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	8/10
Kim & Park 2019[b] [32]	II	✓	✓	✓	✓	X	X	X	✓	X	✓	✓	6/10
Mew, 2010[b] [33]	II	✓	✓	✓	X	X	X	✓	X	X	X	X	3/10
Timmer et al. 2020[b] [34]	II	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	8/10
Tomori et al. 2015[b] [35]	II	✓	✓	X	✓	X	X	✓	X	✓	✓	✓	6/10
Trevena-Peters et al. 2018[b] [36]	II	✓	✓	✓	✓	X	X	✓	✓	X	✓	✓	7/10
Vanderploeg et al. 2008[b] [37]	II	✓	✓	✓	✓	X	X	✓	✓	✓	✓	✓	8/10
Yoshida et al. 2019 [38]	II	✓	✓	✓	✓	X	X	X	✓	✓	✓	✓	7/10

PEDro: Physiotherapy Evidence Database Scale.
✓: indicates that a study has met this criterion and receives a score of "1" in accordance with the PEDro guidelines.
X: indicates a study did not meet this criterion or insufficient information was provided in the published article and receives a score of "0."
[a]as per the PEDro guidelines, no score is awarded for criterion 1 "eligibility criteria."
[b]extracted from PEDro database.

Table 4. Level of evidence and quality assessment scores for all other study designs using the MMAT ($n = 21$).

Author/Year	Study Design	Level of evidence	MMAT (responses to the relevant criteria for each specific study design)
Arsh et al. 2020 [41]	Prospective quasi-experimental, single group, pre-test post-test	III-3	3.1 Are the participants representative of the target population? **No.** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **Not clear** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Christie et al. 2011 [42]	Retrospective quasi-experimental single group pre-test post-test	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **No** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Cox et al. 2014 [43]	Prospective quasi-experimental cohort study using historical controls	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**

De Vos & Leclair, 2019 [44]	Convergent parallel mixed methods	III-3	1.1. Is the qualitative approach appropriate to answer the research question? **Yes** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? **Yes** 4.1. Is the sampling strategy relevant to address the research question? **Yes** 4.2. Is the sample representative of the target population? **Yes** 4.3. Are the measurements appropriate? **Yes** 4.4. Is the risk of nonresponse bias low? **Yes** 4.5. Is the statistical analysis appropriate to answer the research question? **Yes** 5.1. Is there an adequate rationale for using a mixed methods design to address the research question? **Yes** 5.2. Are the different components of the study effectively integrated to answer the research question? **Yes** 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? **Yes** 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? **Yes** 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? **Yes**
Fletcher-Smith et al. 2012 [45]	Prospective, observational cohort study.	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a] **Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Gustafsson & McKenna, 2010 [51]	Prospective exploratory observational cohort	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a] **Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Haley & McKay, 2004 [26]	Qualitative	N/A	1.1. Is the qualitative approach appropriate to answer the research question? **Not clear** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? **Yes**
Hiraga et al. 2021 [39]	non-RCT	III-2	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a] **Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Kasprzyk & Kruk, 2020 [46]	Prospective, quasi-experimental single group pre-test post-test	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a] **Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Kelly & Nikopoulos, 2010 [52]	Multiple baseline probe case series	IV	4.1. Is the sampling strategy relevant to address the research question? **Unclear** 4.2. Is the sample representative of the target population? **No?** 4.3. Are the measurements appropriate? **Yes** 4.4. Is the risk of nonresponse bias low? **Yes** 4.5. Is the statistical analysis appropriate to answer the research question? **Yes**
Landi et al. 2006 [47]	Prospective observational cohort	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a] **Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Ngooi et al. 2021 [55]	Qualitative descriptive methodology	N/A	1.1. Is the qualitative approach appropriate to answer the research question? **Yes** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation? **Yes**
Nilsson & Nygard, 2003 [56]	Qualitative approach using Grounded Theory	N/A	1.1. Is the qualitative approach appropriate to answer the research question? **Yes** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? **Yes**

(*Continued*)

Table 4. Continued.

Author/Year	Study Design	Level of evidence	MMAT (responses to the relevant criteria for each specific study design)
Patil et al. 2019 [57]	Qualitative descriptive methodology	N/A	1.1. Is the qualitative approach appropriate to answer the research question? **Yes** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis and interpretation? **Yes- pending answer to 1.2**
Patterson et al. 2017 [53]	Observational cross-sectional	IV	4.1. Is the sampling strategy relevant to address the research question? **Yes** 4.2. Is the sample representative of the target population? **Yes** 4.3. Are the measurements appropriate? **Yes** 4.4. Is the risk of nonresponse bias low? **Yes** 4.5. Is the statistical analysis appropriate to answer the research question? **Yes**
Patterson et al. 2019 [58]	Qualitative phenomenological design	N/A	1.1. Is the qualitative approach appropriate to answer the research question? **Yes** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? **Yes**
Pillastrini et al. 2008 [40]	Non-RCT	III-2	3.1 Are the participants representative of the target population? **No** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **No** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Shearer & Guthrie, 2013 [48]	Prospective quasi-experimental time series cohort	III-3	3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**
Skidmore et al. 2011 [54]	Case report	IV	4.1. Is the sampling strategy relevant to address the research question? **Yes** 4.2. Is the sample representative of the target population? **No** 4.3. Are the measurements appropriate? **Yes** 4.4. Is the risk of nonresponse bias low? **Yes** 4.5. Is the statistical analysis appropriate to answer the research question? **Yes**
Trevena-Peters et al. 2019[a] [49]	Mixed methods (Retrospective single group pre-test, post-test and qualitative study)	III-3	1.1. Is the qualitative approach appropriate to answer the research question? **Yes** 1.2. Are the qualitative data collection methods adequate to address the research question? **Yes** 1.3. Are the findings adequately derived from the data? **Yes** 1.4. Is the interpretation of results sufficiently substantiated by data? **Yes** 1.5. Is there coherence between qualitative data sources, collection, analysis, and interpretation? **Yes** 3.1 Are the participants representative of the target population? **Yes** 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes** 5.1. Is there an adequate rationale for using a mixed methods design to address the research question? **Yes** 5.2. Are the different components of the study effectively integrated to answer the research question? **Yes** 5.3. Are the outputs of the integration of qualitative and quantitative components adequately interpreted? **Yes** 5.4. Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? **Yes** 5.5. Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? **Yes**
Udovicich et al. 2020 [50]	Retrospective single group pre-test, post-test	III-3	3.1 Are the participants representative of the target population? **No.***Convenience sampling of a retrospective sample was used.* 3.2. Are measurements appropriate regarding both the outcome and intervention (or exposure)? **Yes** 3.3. Are there complete outcome data?[a]**Yes** 3.4. Are the confounders accounted for in the design and analysis? **Yes** 3.5. During the study period, is the intervention administered (or exposure occurred) as intended? **Yes**

MMAT: Mixed Methods Appraisal Tool; RCT: Randomised Controlled Trial.
[a]>85% follow-up for outcome measures.

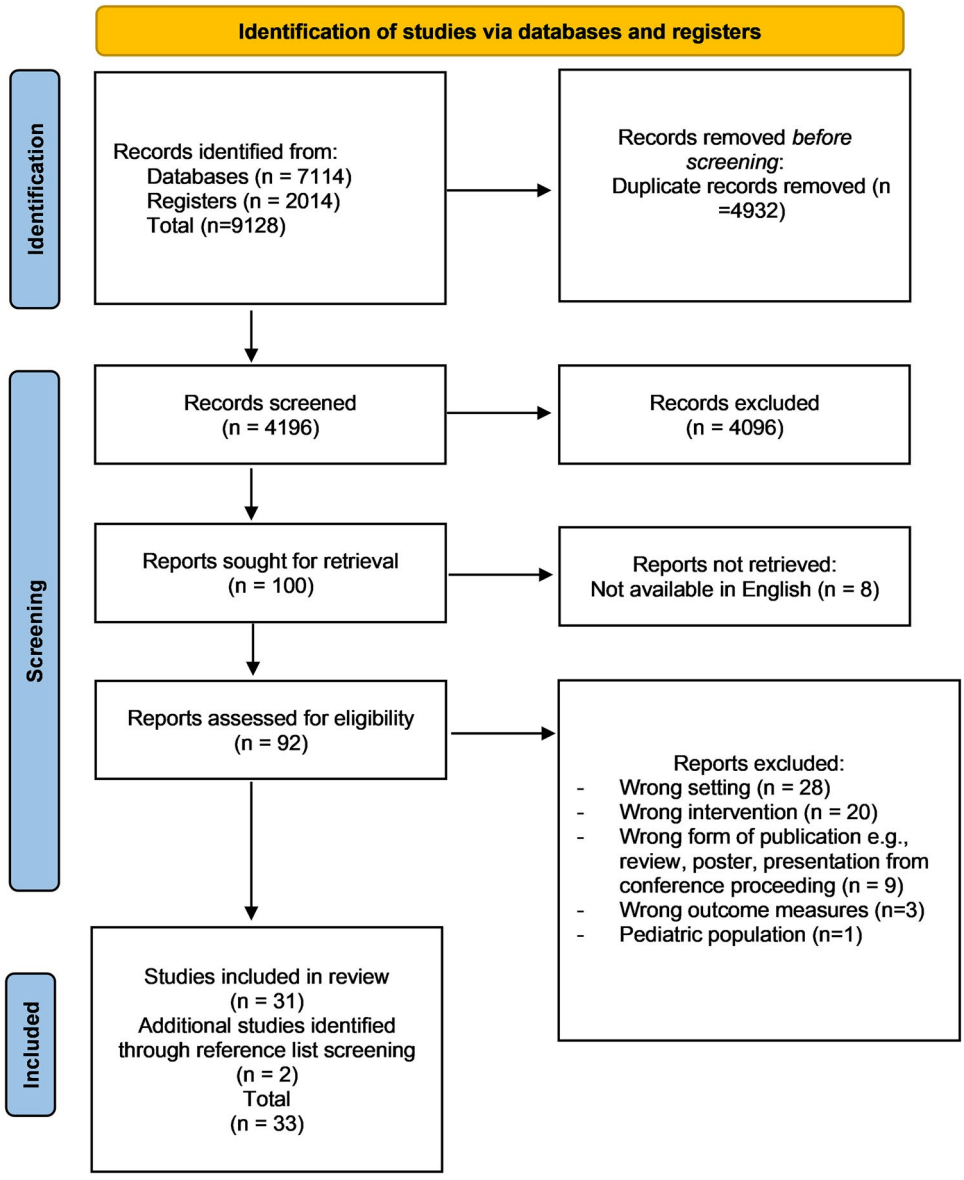

Figure 2. PRISMA Flow diagram.

PEDro scores of the RCTs ranged from 3–8 with a mean of 6.75 (SD 1.36) (Table 3). All trials met the inclusion criteria for random allocation (100%). Majority met the criteria for concealed allocation (83%), baseline similarity (92%), blinding of assessors (75%), and obtaining outcome data for >85% of their participants (75%). No trials met the inclusion criteria for subject or therapist blinding (0%). Seventy-five percent met the criteria for delivering the treatment and control as allocated (or using intention to treat analysis), 83% met the criteria for between-group statistical comparisons and 92% met the criteria for providing point measures and measures of variability. All studies except for one [33], were rated as good quality RCTs (between 6–8/10 PEDro scores).

For quality assessment of remaining studies, the MMAT was used (Table 4). Overall, majority of studies met the criteria for appropriate sampling strategy, recruitment of participants representative of the target sample, appropriate selection of outcome measures, suitable data collection and analysis methods, correct administration of the intervention, and low risk of non-response bias. Two studies [25,42], did not meet the criteria for appropriate outcome measures as they used components of the Functional Independence Measure rather than the whole assessment. Several studies also did not meet the criteria for having a sample representative of the target population including recruitment of males only [40], the use of convenience sampling methods [41,50], and case study designs [52,54].

Participants

The included quantitative studies recruited 1582 participants, 1504 of which completed post-intervention assessment. Total sample sizes ranged from one to 360. Participants' average age ranged from 30.21(13.52) to 87.1(6.4) years and 40.5% were female (642/1582). Of the studies included in this review 15 were conducted with stroke populations [25,28,30,32,33,35,38,42,45–47,51,54,56,57], three in spinal cord injury (SCI) populations [38,40,41], one in cancer populations [50], three in mental health populations [26,44,55], six in traumatic brain injury (TBI) populations [36,37,49,52,53,58], two in geriatric populations [43,48], and five in general and medical condition populations [29,31,34,38,39].

Intervention

Seven studies delivered the intervention in the acute setting [29,33,37,45,50,52,57], 23 in the inpatient setting [25,28,30,31,34–36,38–43,46–49,51,53,54,56,58], and three in the mental health setting [26,44,55]. Occupation-based interventions were delivered in both individual and group formats; 13 delivered the intervention in a group-based format [26,34,37,42–44,50,51,53,55–58] and 20 were delivered in an individual format [25,28–33,35,36,38–41,45–49,52,54].

Interventions adopted structured and unstructured approaches to their intervention delivery. Two studies [53,58], utilised a structured process for referrals to their occupation-based group intervention and group planning. A group outline document was implemented to guide occupational therapists facilitating the groups and provide structure to the group process; group content was not manualised to ensure that activities, strategies, and discussion topics could be selected to meet individual participants' goals [53]. Conversely, two studies [36,49] (both delivered in a 1:1 format) utilised a training manual to guide retraining underpinned by specific errorless learning, procedural learning, and task-specific training principles. Four studies implemented the Cognitive Orientation to daily Occupational Performance (CO-OP) approach to structure their 1:1 occupation-based interventions [25,28,31,54] and one study [55], used group theory to guide the overall structure of their occupation-based group intervention.

Occupation-based interventions targeted both self-care occupations and home or community-based occupations. Of the studies included in this review, eight focused on self-care occupations [25,33,41,42,45–47,52], 12 focused on home or community-based occupations [26,34,43,44,50,51,53–58], and 13 focused on a combination of self-care and home or community-based occupations [28–32,35–40,48,49].

Comparison interventions

Nine studies compared an experimental group to a control group of "usual" or "standard" occupational therapy [25,28,29,31,33,34,38,48,51] and four studies utilised a control group with no occupational therapy [36,39,40,47]. Few studies provided detail regarding the delivery and content of the control interventions. Five studies compared two experimental groups: an occupation-based group program delivered by occupational therapists compared with allied health assistant delivery [43], ADL dual task training compared with non-ADL single task training [30], occupation-based activities compared with task-based, bilateral upper extremity training in addition to conventional occupational therapy [32], occupation-based interventions compared with component-focused interventions [35], and a functional experiential intervention compared with cognitive-didactic intervention in addition to usual occupational therapy [37]. Ten studies did not have a comparison group [41,42,44–46,49,50,52–54].

Outcomes

There was significant heterogeneity in the outcome measures used across included studies (Table 2). Occupational performance was measured using a range of outcome measures; the Functional Independence Measure, the Canadian Occupational Performance Measure, and the Stroke Impact Scale were most commonly used. A variety of outcome measures were also used to measure participation and quality of life with the most used measures including the Stroke Impact Scale and the Client Satisfaction Questionnaire. Two studies also used self-developed questionnaires [44,53]. Two studies included qualitative exploration of clinician perceptions and experiences of occupation-based interventions [49,57] and five explored patient perceptions and experiences [26,44,55,56,58].

Quantitative results

For synthesis of quantitative results, included studies were grouped by setting (acute, inpatient rehabilitation or mental health settings). Studies were further categorised by the types of occupations they targeted (self-care occupations and/or home or community-based occupations). Refer to Table 2 for full details of each study's results.

Occupation-based interventions delivered in the acute setting

Of the studies in the acute setting three addressed self-care occupations [33,45,52], one addressed home or community-based occupations [50] and two addressed a combination of self-care, home, or community-based occupations [29,37]. Three Level II studies resulted in non-significant between-group differences and demonstrated improvements in occupational performance regardless of intervention allocation [29,33,37]. Anecdotal feedback from carers and patients collected by occupational therapists (written notes) in one study [29] identified benefits of the occupation-based intervention on confidence to manage self-care and mobility on discharge, enhanced sense of well-being and greater confidence from carers and family in the discharge plan. The remaining studies also demonstrated positive results following dressing retraining [45] errorless learning and strategy training for a range of self-care tasks [52], and a meal preparation group [50] on their respective occupational performance outcomes. These studies had several methodological weaknesses including single group or case series designs with no comparison group and small sample sizes.

Overall, there is a dearth of rigorous research on the impact of occupation-based interventions (targeting self-care and/or home or community-based occupations) in the acute hospital setting. Whilst evidence mostly supports the use of occupation-based interventions to improve occupational performance and participation, there is insufficient evidence to determine whether occupation-based interventions are more effective than any control.

Occupation-based interventions delivered in the inpatient rehabilitation setting

Of the studies conducted in the inpatient rehabilitation setting, five studies targeted self-care occupations [25,41,42,46,47], five targeted home or community-based occupations [34,43,51,53,54], and 11 targeted a combination of self-care, home or community-based occupations [28,30–32,35,36,38–40,48,49]. Nine Level II studies examined the effects of occupation-based interventions with mixed results [25,28,30–32,34–36,38]. Of these, five demonstrated positive results in favour of occupation-based interventions for improving quality of life [30,38], participation [34], occupational performance [32], and functional independence outcomes [36]. Several of these were limited by small sample sizes and the use of self-reported measures of occupational performance.

Three Level II studies explored the impact of the CO-OP approach on occupational performance outcomes and found no significant between-group difference between this and their respective controls [25,28,31]; two of these reported significant

improvements regardless of intervention allocation [25,31]. A Level IV study [54] also used the CO-OP approach demonstrating clinically significant improvement in occupational performance however conclusions were limited by the single case study design.

Five studies delivered occupation-based interventions in a group format in the inpatient setting for self-care occupations [42] and home or community-based occupations [34,43,51,53]. Results of these studies generally supported the use of occupation-based interventions delivered in a group format however, underpowered studies, use of retrospective data, and lack of appropriate control groups resulted in insufficient evidence to determine whether occupation-based group interventions were more effective than any control or alternative intervention.

The remaining studies provided lower quality evidence generally supporting the use of occupation-based interventions in the inpatient setting targeting self-care occupations [41,46,47] and a combination of self-care and home or community-based occupations [39,48]. Studies were limited by their non-randomised design, self-reported outcomes, and underpowered, heterogenous samples.

Overall, there was a considerably larger degree of empirical research to support the use of occupation-based interventions for improving occupational performance, participation, and quality of life outcomes in the inpatient rehabilitation setting. There were varied results comparing occupation-based interventions to a control (either usual care or another intervention) with overall insufficient evidence to suggest that occupation-based interventions are more effective than any control. Many studies were underpowered and did not use an appropriate control group. Furthermore, a diverse range of outcome measures were used to measure occupational performance, participation, and quality of life across these studies (many of which were self-reported measures) making it difficult to draw conclusions with certainty regarding the impact of occupation-based interventions compared to any control in the inpatient rehabilitation setting.

Mental health setting

Only one Level III-3 study [44] evaluated the effectiveness of an occupation-based intervention in the mental health setting. The study evaluated the effectiveness a weekly food skills group and found patients reported a high percentage of satisfaction with participation in the group, felt their food skills had improved and that group participation was relevant and useful as they prepared for discharge [44]. There is insufficient evidence to draw conclusions on the impact of occupation-based interventions on improving occupational performance, participation, and quality of life in the mental health setting.

Qualitative results

Patient perceptions and experiences of occupation-based interventions

Five studies explored patient perceptions and experiences of participation in occupation-based interventions in the hospital setting [26,44,55,56,58]. All studies explored occupation-based interventions delivered in a group format for TBI [58], stroke [56], and mental health populations [26,44,55]. Several common themes were identified across these studies. The opportunity to practice meaningful occupations through 'doing' was valued by participants to improve independence and confidence in preparation for discharge, and to regain a sense of normalcy following hospitalisation.

The group-design of these occupation-based interventions were valued by participants for enabling opportunities for peer-learning, connecting with other patients through shared experiences and helped to develop insight into their performance [26,44,55,58]. Participating in occupation-based interventions also enabled participants to develop strong therapeutic relationships with their therapists which improved motivation to attend the groups [55].

Participants highlighted several facilitatory strategies to successful occupation-based group interventions across studies. These included the importance of linking group participation to their goals, use of experienced group facilitators, participant selection, and group planning and design to facilitate successful group interventions [26,44,58]. Barriers to occupation-based groups identified by participants included available spaces within the hospital setting to participate in occupation-based interventions in a group format, group sizes, and balancing varying skill levels within the groups [26,44]. Participants in one study [26], reported that they did not feel their feedback would result in changes to the group intervention.

Clinician perceptions and experiences of occupation-based interventions

Two studies explored clinician perceptions and experiences of the use of occupation-based interventions [49,57]. A study by Patil et al. [57] used notes written by four occupational therapists immediately following completion of a gardening group in an acute stroke unit. Therapists acknowledged the benefits of the group program for skill training and acquisition, opportunity for patients to practice the use of their stroke-affected limbs, enhancing motivation and engagement in therapy, potential benefits to mental health and well-being, and for building social connections through shared experiences [57].

Another study [49], explored the perceptions and experiences of four occupational therapists on the implementation of an occupation-based intervention for adults experiencing post traumatic amnesia (PTA) post TBI. Clinicians found implementing the occupation-based intervention early on in patients' rehabilitative journeys enabled them to build a strong therapeutic relationship that continued post PTA emergence [49]. Similarly, to the aforementioned study [57], clinicians found many patients were easier to engage when they were undertaking meaningful and relevant activities such as during ADL retraining; when patients did not enjoy occupation-based activities, therapists were required to develop additional strategies to improve engagement [49]. Other benefits of the occupation-based intervention included assisting in routine development and increasing independence in selected occupations [49]. Fatigue was identified as a major barrier to engagement in the occupation-based intervention [49]. This intervention also used a manual to provide structure to the intervention and the use of errorless learning principles. Whilst some therapists found the manual to be useful in guiding therapy and enabling effective implementation of errorless learning techniques, others acknowledged that the manual may also limit the scope of the intervention as there were limited occupation-based tasks to select from [49].

Discussion

This systematic review aimed to understand the impact of occupation-based interventions on occupational performance and participation outcomes in the hospital setting. Thirty-three research studies that evaluated the use of occupation-based interventions quantitatively and qualitatively across acute, inpatient, and mental health hospital settings were included. There is good evidence to support occupation-based interventions to improve occupational

performance and participation outcomes in inpatient rehabilitation however it is unclear whether they are more effective than any control or alternative intervention. Research in the acute and mental health hospital settings were scarcer.

Occupation-based interventions in the acute setting

There were limited studies evaluating the impact of occupation-based interventions in the acute hospital setting. Included studies mostly supported the use of occupation-based interventions. There was a scarcity of high-quality research however, and significant variability across interventions, study designs, and reported outcomes, making it difficult to draw conclusions on the impact of occupation-based interventions in this setting. Studies most commonly targeted self-care occupations with a smaller number targeting home or community-based occupations in this setting. Occupation-based interventions were delivered both individually and in a group format. Qualitative exploration of clinician perceptions and experiences of occupation-based interventions delivered in the acute setting identified benefits including opportunity for skill retraining and regaining independence with occupations, improving engagement and motivation for therapy when participating in meaningful occupations, and enabling clinicians to build a strong therapeutic relationship with their patients [49,57]. Whilst empirical evidence for occupation-based interventions in the acute hospital setting is limited, qualitative research has also suggested therapeutic benefits to the use of occupation-based interventions to improve patient outcomes and engagement.

A scoping review by Murray et al. [59] explored existing literature on contemporary occupational therapy practice in the acute hospital setting. They found whilst therapists practicing in the acute hospital setting valued occupation, there were several individual (knowledge, understanding and confidence in implementing occupation-based practice) and environmental (space, resources and the fast-paced, and discharge-focused nature of the acute setting) barriers to aligning their practice with the professions Contemporary Paradigm [60] including the use of occupation-based practice [59]; this may contribute to the sparseness of current research on occupation-based interventions in this setting. Authors warned of the potential impact of this on patient outcomes if therapists are not providing the occupational therapy "profession's unique expertise regarding the link between occupation, health and well-being" [59, p. 222]. Murray et al. [59] suggested potential avenues for future research including understanding any gaps in clinicians' knowledge and confidence to use occupation-based practice approaches to be able to target education and support for therapists to adopt contemporary occupational therapy philosophy and practice in the acute setting.

Occupation-based interventions in the inpatient rehabilitation setting

Overall, there was good evidence to support the impact of occupation-based interventions in the inpatient rehabilitation setting on occupational performance and participation outcomes for a range of diagnostic groups. Two studies [25,28], did not separate their reported outcomes between inpatient and outpatient applications of their occupation-based interventions, making it difficult to draw conclusions on the effectiveness of these interventions specifically in the hospital setting. Limitations including underpowered studies, lack of appropriate control groups, diversity of interventions and choice of outcome measures across included studies in the inpatient rehabilitation setting resulted in insufficient evidence to conclude whether occupation-based interventions are more effective than any controls or alternative interventions for improving occupational performance and participation. Occupation-based interventions targeted a range of self-care and home or community-based occupations. Several studies used manualised and/or structured interventions (such as the CO-OP approach). Occupation-based interventions were delivered both individually and in group formats.

Patient perceptions and experiences of occupation-based interventions in the inpatient rehabilitation setting provide additional insights into their potential impact. Two studies explored patient perceptions and experiences of occupation-based interventions delivered in a group format in the inpatient rehabilitation setting. Participants acknowledged the value of being able to practice meaningful occupations and learn through 'doing' to improve independence, prepare for discharge home and regain a sense of normalcy [56,58]. Benefits unique to a group-based format for delivering occupation-based interventions in this setting included enabling opportunities for peer-learning, connecting with other patients through shared experiences and helping to develop insight into participants' performance [58].

Two additional studies [61,62] published after database searching had concluded for this review also contribute to the current empirical evidence surrounding occupation-based interventions in the inpatient rehabilitation setting. Spalding et al. [62] found statistically significant improvements in occupational performance, satisfaction and confidence following participation in an occupation-based group intervention on a general rehabilitation ward. Limitations of this study include its' non-randomised, uncontrolled design, and a small, heterogenous sample size [62]. A process evaluation was also undertaken alongside this study [61] and found that an occupation-based intervention delivered in the inpatient rehabilitation setting was feasible to conduct in a group format, resulted in positive patient outcomes, and still enabled provision of patient-centred and individualised care. Spalding et al. [62] recommended future, more rigorous research to evaluate cause-effect relationships and economic value of occupation-based groups in the inpatient setting as well as determining the applicability of any findings across a variety of inpatient rehabilitation settings.

Another study [63], published after database searching had concluded for this review explored patient perceptions following participation in the same occupation-based group intervention referenced above [62]. Using semi-structured interviews, key findings included the importance of client-centred goal setting, building confidence to discharge home through engagement in "real-world" occupations, and building strong therapeutic relationships to support recovery [63].

Occupation-based interventions in the mental health setting

Only one empirical study evaluated patient outcomes following an occupation-based intervention in the mental health setting, with insufficient evidence to support or refute the use of occupation-based interventions in this setting. Qualitative results of occupation-based interventions delivered in a mental health setting suggest several patient-perceived benefits as well. Similarly, to the acute and inpatient rehabilitation settings, the importance of engaging in therapy through 'doing', regaining independence, and improving discharge-readiness were benefits of occupation-based interventions valued by participants across studies [26,44,55]. Occupation-based interventions delivered in the

mental health setting were all delivered in group-formats with participants identifying opportunities for peer-learning, making social connections, and feeling a sense of accomplishment as other positive outcomes [26,44,55].

The results of this systematic review are congruent with an evidence-based review by Wolf et al. [8] who found sufficient evidence to support the use of occupation-based interventions to improve occupational performance following stroke in both inpatient and community settings. Authors concluded that there was greater evidence to support the use of occupation-based interventions targeting personal activities of daily living compared with instrumental activities of daily living and identified similar limitations in the literature to this review regarding methodological weaknesses that reduce generalisability of research findings [8].

Limitations

Limitations of included studies

A limitation of the included studies in this review was poor reporting of intervention details. Many studies provided vague descriptions of both interventions and any control or alternative therapy provided to participants. Poor reporting of interventions makes it difficult to replicate or translate this knowledge into clinical practice. Future studies should consider using guides such as the TIDieR checklist [64] to ensure they are reporting on study interventions with sufficient detail to enable replication.

As previously mentioned, a range of outcome measures assessing occupational performance, participation, and quality of life were used across studies in this review. Many of these outcome measures were also self-reported, and assessment of home or community-based occupations were particularly poorly captured. For example, studies examining the effects of interventions that targeted home or community-based occupations often used self-reported measures and measures of self-care such as the COPM, SIS, FIM, or modified BI. Whilst self-reported measures such as the COPM and SIS assess functional performance, the self-report design poses a risk of inaccuracy. Gustafsson & Mckenna [51] discussed the potential impact of building self-awareness into performance challenges through occupation-based interventions; this has the potential to impact self-reported measures as participants may have overstated their initial ratings of performance or participation. Furthermore, several studies that implemented occupation-based interventions targeting home or community-based occupations used measures of self-care to evaluate occupational performance such as the FIM [36,37] and modified BI [48]; this makes it difficult to determine the impact of these interventions on occupational performance comprehensively as these measures do not encapsulate performance of home and community-based occupations targeted in the study interventions. To be able to draw conclusions on the effectiveness of occupation-based interventions, psychometrically robust, occupation-specific outcome measures are required [65].

As previously mentioned, two of the included studies [25,28] included post-test outcomes that were inclusive of both inpatient and outpatient delivery of their occupation-based intervention and thus it was not possible to report on the impact of each intervention specifically in the hospital setting. Further data and results were requested for outcomes specifically from the inpatient component of the intervention however, these were unavailable.

Limitations of this review

It should be recognised that there are several definitions of occupation-based interventions that are accepted and used in occupational therapy literature [5]. As reported by Ford et al. [5] these various definitions create a sense of ambiguity surrounding how occupation is operationalised in practice. This systematic review used the definition of occupation-based interventions proposed by Fisher [6] and this should be taken into consideration when interpreting the result of this review.

Data extraction and assessment of risk of bias was primarily completed by one reviewer (GW) with only 10% cross-checked by a co-reviewer for risk of bias assessment and 30% for data extraction due to availability and time constraints of the research team. This increases the risk of inaccurate data extraction and quality assessment particularly given that the MMAT contains an element of subjectivity and judgement from the reviewer in the scoring process [66]. Risk of inaccurate data extraction was minimised by using a pre-determined data extraction tool agreed upon by the research team prior to data extraction. Risk of assessor bias during risk of bias assessment was minimised through cross-checking of 10% of risk of bias assessments and extracting any PEDro scores available from the PEDro database. Furthermore, prior to commencing risk of bias assessment, each item on the scale used were discussed amongst the two members of the research team completing the assessments (GW and SI) to ensure consistency with interpretation. If reviewers (GW or SI) were unsure of scoring for a particular item this was discussed amongst the research team until consensus was achieved.

Resulting scores from risk of bias assessment using the MMAT were relatively high across the included studies. A potential contributing factor to this could be the simplistic design of the tool with only five items for each research design set (except for mixed method studies which uses 15 items) [66]. This lack of "completeness" in quality assessment may mean that other factors that contribute to methodological quality (and are included in other assessment tools) such as conflict of interest, quality of reporting, sample size, external validity, data analysis, triangulation, and ethics are not properly captured, impacting on the comprehensiveness of the tool [66]. The reviewers acknowledge that quality assessment of all remaining articles should be interpreted with caution due to the increased risk of assessor bias or error as well as the discussed limitations of the MMAT.

This systematic review included studies of any design, with several methodological limitations identified above. The results of this systematic review should therefore be interpreted with caution. Given the ambiguity surrounding the term 'occupation-based' observed in occupational therapy literature [6], the research team felt it was appropriate to include studies of any design. This systematic review aimed to capture the current evidence on the effectiveness of occupation-based interventions (as defined by Fisher [6]) when implemented in the hospital setting. As no previous systematic review has examined the evidence for occupation-based interventions in the hospital setting, studies of any design were included to provide a comprehensive assessment of all available evidence for this intervention.

This review did not place any search restrictions to the populations receiving occupation-based interventions in the hospital setting which also may have implications on the overall results. Studies included participants with a range of diagnoses significantly contributing to the heterogeneity in this review. Focusing on a single diagnosis or population group may have produced different results.

Conclusion

Due to the heterogeneity across included studies, and methodological limitations of many, results of this systematic review should be interpreted with caution. Empirical evidence generally supports the use of occupation-based interventions to improve occupational performance however there is insufficient evidence to determine whether occupation-based interventions are more effective than any control or alternative intervention. Qualitative research of occupation-based interventions in the hospital setting also reflects a positive impact on the patient experience and patient outcomes. This was demonstrated through reports of improved independence, enhancing motivation and engagement in rehabilitation, and strengthening therapeutic relationships; peer-learning and developing social connections were additional patient-perceived impacts specifically for occupation-based groups.

Further research is required to determine the impact and effectiveness of occupation-based interventions in the hospital setting, particularly acute and mental health settings. A greater emphasis should be placed on the accurate reporting of intervention designs to enable replication and translation of evidence into clinical practice, and to enable reliable interpretation of reported outcomes. Furthermore, researchers should also consider the use of an appropriate control group and more robust measures of occupational performance when investigating the effect of occupation-based interventions. Several studies have also evaluated the effectiveness of occupation-based groups with further, more rigorous research warranted in this space to assess how occupation-based interventions delivered in a group format compares to usual, individual-based modes of delivery on patient outcomes.

Acknowledgments

The authors acknowledge Mr Murray Turner, Librarian, University of Canberra, Canberra, Australia, for his support and guidance in the development of a search strategy for this systematic review.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This systematic review received no specific grant from any funding agency in the public, commercial, or non-for-profit sectors. GW was supported by the Commonwealth through the Australian Government Research Training Program Scholarship throughout the duration of this study.

ORCID

Gemma Wall http://orcid.org/0000-0002-6220-2287
Stephen Isbel http://orcid.org/0000-0001-5355-3205
Louise Gustafsson http://orcid.org/0000-0001-5232-0987
Claire Pearce http://orcid.org/0000-0002-2094-336X

References

[1] Bourland ELR, Neville MA, Pickens ND. Loss, gain, and the reframing of perspectives in long-term stroke survivors: a dynamic experience of quality of life. Top Stroke Rehabil. 2011;18(5):437–449. doi:10.1310/tsr1805–437.
[2] Curtin M, Molinex M. Chapter 11, occupation: philosophy and concepts. In: Radomski MV, Trombley Latham CA, editors. Occupational therapy for physical dysfunction. 7th ed. Philadelphia: Wolters Kluwer; 2014.p. 338–359.
[3] Schell BAB, Gillen G. Willard and spackman's occupational therapy. 13th ed. Philadelphia: Wolters Kluwer; 2019.
[4] McEneany J, McKenna K, Summerville P. Australian occupational therapists working in adult physical dysfunction settings: what treatment media do they use? Aust J Occup Ther. 2002;49(3):115–127. doi:10.1046/j.1440–1630.2002.00279.x.
[5] Ford E, Di Tommaso A, Gustafsson L, et al. Describing the occupational nature of practice: a scoping review. Scand J Occup Ther. 2021;29(5):1–10.
[6] Fisher AG. Occupation-centred, occupation-based, occupation-focused: same, same or different? Scand J Occup Ther. 2014;21(3):96–107. doi:10.3109/11038128.2014.952912.
[7] Gray JM. Putting occupation into practice: occupation as ends, occupation as means. Am J Occup Ther. 1998;52(5):354–364. doi:10.5014/ajot.52.5.354.
[8] Wolf TJ, Chuh A, Floyd T, et al. Effectiveness of occupation-based interventions to improve areas of occupation and social participation after stroke: an evidence-based review. Am J Occup Ther. 2015;69(1):6901180060p1–690118006011. doi:10.5014/ajot.2015.012195.
[9] Powell JM, Rich TJ, Wise EK. Effectiveness of occupation- and activity-based interventions to improve everyday activities and social participation for people with traumatic brain injury: a systematic review. Am J Occup Ther. 2016;70(3):7003180040p1–7003180040p9. doi:10.5014/ajot.2016.020909.
[10] American Occupational Therapy Association. Occupational therapy practice framework: domain and process. 3rd ed. American Occupational Therapy Association; 2014.
[11] American Occupational Therapy Association. Occupational therapy practice framework: domain & process. 2nd ed. American Occupational Therapy Association; 2008.
[12] Mohapatra S, Kulnik ST. Kitchen-related tasks used in occupational therapy during rehabilitation of adults with acquired brain injury: a systematic review. Br J Occup Ther. 2021;84(1):22–41. doi:10.1177/0308022620950975.
[13] Arbesman M, Lieberman D, Berlanstein DR. Method for the evidence-based reviews on occupational therapy and stroke. Am J Occup Ther. 2015;69(1):6901180020p1–6901180020p5. doi:10.5014/ajot.2015.013524.
[14] Orellano E, Colón WI, Arbesman M. Effect of occupation- and activity-based interventions on instrumental activities of daily living performance among community-dwelling older adults: a systematic review. Am J Occup Ther. 2012;66(3):292–300. doi:10.5014/ajot.2012.003053.
[15] Hoffmann T, Bennett S, Del Mar C. Evidence-based practice across the health professions. 2nd ed. Chatswood, Australia: Elsevier Churchill Livingstone; 2013.
[16] Australian Institute of Health and Welfare. ICF Australian user guide version 1.0. 2003.
[17] Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Syst Rev. 2021;10(1):89–89. doi:10.1186/s13643–021–01626–4.
[18] Maher CG, Sherrington C, Herbert RD, et al. Reliability of the PEDro scale for rating quality of randomized controlled trials. Phys Ther. 2003;83(8):713–721. doi:10.1093/ptj/83.8.713.
[19] Cashin AG, McAuley JH. Clinimetrics: physiotherapy evidence database (PEDro) scale. J Physiother. 2020;66(1):59. doi:10.1016/j.jphys.2019.08.005.

[20] Hong QN, Pluye P, Fabregues S, et al. Mixed methods appraisal tool (MMAT), version 2018. Canadian Intellectual Property Office; Canada; 2018.
[21] Hong QN, Pluye P, Fàbregues S, et al. Improving the content validity of the mixed methods appraisal tool: a modified e-Delphi study. J Clin Epidemiol. 2019;111:49–59.e1. doi:10.1016/j.jclinepi.2019.03.008.
[22] National Health and Medical Research Council. A guide to the development, implementation and evaluation of clinical practice guidelines. Canberra, ACT National Health and Medical Research Council, Commonwealth of Australia; 1999.
[23] Popay J, Roberts H, Sowden A, et al. Gudiance on the conduct of narrative synthesis in systematic reviews: a product from the ESRC methods programme. UK: Lancaster University; 2006.
[24] Centre for Reviews and Dissemination. Systematic reviews: CRD's guidance for undertaking reviews in health care. Layerthorpe, York: CRD, University of York; 2009.
[25] Guidetti S, Andersson K, Andersson M, et al. Client-centred self-care intervention after stroke: a feasibility study. Scand J Occup Ther. 2010;17(4):276–285. doi:10.3109/11038120903281169.
[26] Haley L, McKay EA. Baking gives you confidence: users views of engaging in the occupation of baking. Br J Occup Ther. 2004;67(3):125–128. doi:10.1177/030802260406700305.
[27] Patterson F, Fleming J, Doig E. Clinician perceptions about inpatient occupational therapy groups in traumatic brain injury rehabilitation. Brain Inj. 2017;31(8):1077–1087. doi:10.1080/02699052.2017.1296974.
[28] Bertilsson AS, Ranner M, von Koch L, et al. A client-centred ADL intervention: three-month follow-up of a randomized controlled trial. Scand J Occup Ther. 2014;21(5):377–391. doi:10.3109/11038128.2014.880126.
[29] Eyres L, Unsworth CA. Occupational therapy in acute hospitals: the effectiveness of a pilot program to maintain occupational performance in older clients. Aust Occ Ther J. 2005;52(3):218–224. doi:10.1111/j.1440–1630.2005.00498.x.
[30] Hee-Su A, Deok-Ju K. Effects of activities of daily living-based dual-task training on upper extremity function, cognitive function, and quality of life in stroke patients. Osong Public Health Res Perspect. 2021;12(5):304–313. doi:10.24171/j.phrp.2021.0177.
[31] Khanipour M, Lajevardi L, Taghizadeh G, et al. The investigation of the effects of occupation-based intervention on anxiety, depression, and sleep quality of subjects with hand and upper extremity burns: a randomized clinical trial. Burns. 2022;48(7):1645–1652. doi:10.1016/j.burns.2022.02.014.
[32] Kim SH, Park JH. The effect of occupation-based bilateral upper extremity training in a medical setting for stroke patients: a single-blinded, pilot randomized controlled trial. J Stroke Cerebrovasc Dis. 2019;28(12):1–10.
[33] Mew M. Normal movement and functional approaches to rehabilitate lower limb dressing following stroke: a pilot randomised controlled trial. Br J Occup Ther. 2010;73(2):64–70. doi:10.4276/030802210X12658062793807.
[34] Timmer AJ, Unsworth CA, Browne M. Occupational therapy and activity pacing with hospital-associated deconditioned older adults: a randomised controlled trial. Disabil Rehabil. 2020;42(12):1727–1735. doi:10.1080/09638288.2018.1535630.
[35] Tomori K, Nagayama H, Ohno K, et al. Comparison of occupation-based and impairment-based occupational therapy for subaucte stroke: a randomized controlled feasiblity study. Clin Rehabil. 2015;29(8):752–762. doi:10.1177/0269215514555876.
[36] Trevena-Peters J, McKay A, Spitz G, et al. Efficacy of activities of daily living retraining during posttraumatic amnesia: a randomized controlled trial. Arch Phys Med Rehabil. 2018;99(2):329–337.e2. doi:10.1016/j.apmr.2017.08.486.
[37] Vanderploeg RD, Schwab K, Walker WC, et al. Rehabilitation of traumatic brain injury in active duty military personnel and veterans: defense and veterans brain injury center randomized controlled trial of two rehabilitation approaches. Arch Phys Med Rehabil. 2008;89(12):2227–2238. doi:10.1016/j.apmr.2008.06.015.
[38] Yoshida I, Hirao K, Kobayashi R. The effect on subjective quality of life of occupational therapy based on adjusting the challenge–skill balance: a randomized controlled trial. Clin Rehabil. 2019;33(11):1732–1746. doi:10.1177/0269215519858713.
[39] Hiraga Y, Hisano S, Hara R, et al. Combining goal setting and achievement with occupational therapy to improve pain, psychological factors and physical activity in patients after high tibial osteotomy: a non-randomized controlled study. Hong Kong J Occup Ther. 2021;34(1):23–29. doi:10.1177/1569186120985296.
[40] Pillastrini P, Mugnai R, Bonfiglioli R, et al. Evaluation of an occupational therapy program for patients with spinal cord injury. Spinal Cord. 2008;46(1):78–81. doi:10.1038/sj.sc.3102072.
[41] Arsh A, Anwar Z, Zeb A, et al. Effectiveness of occupational therapy in improving activities of daily living performance in complete cervical tetraplegic patients: a quasi experimental study. Pak J Med Sci. 2020;36(2):96–99.
[42] Christie L, Bedford R, McCluskey A. Task-specific practice of dressing tasks in a hospital setting improved dressing performance post-stroke: a feasibility study. Aust Occup Ther J. 2011;58(5):364–369. doi:10.1111/j.1440–1630.2011.00945.x.
[43] Cox RJ, Mills VJ, Fleming J, et al. Implementation of an advanced occupational therapy assistant-led groups programme in aged care rehabilitation. Aust Occup Ther J. 2014;61(3):187–193. doi:10.1111/1440–1630.12105.
[44] De Vos G, Leclair L. Food skills group value, meaning, and use with inpatients in a mental health setting. Br J Occup Ther. 2019;82(6):326–336. doi:10.1177/0308022618823660.
[45] Fletcher-Smith J, Walker MF, Drummond A. The influence of hand use on dressing outcome in cognitively impaired stroke survivors. Br J Occup Ther. 2012;75(1):2–9. doi:10.4276/030802212X13261082051292.
[46] Kasprzyk P, Kruk P. Improvement in eating activity among patients after ischemic stroke – use of adaptation in occupational therapy. Med Rehabil. 2020;24(2):4–8. doi:10.5604/01.3001.0014.5064.
[47] Landi F, Cesari M, Onder G, et al. Effects of an occupational therapy program on functional outcomes in older stroke patients. Gerontol. 2006;52(2):85–91. doi:10.1159/000090953.
[48] Shearer T, Guthrie S. Facilitating early activities of daily living retraining to prevent functional decline in older adults. Aust Occup Ther J. 2013;60(5):319–325. doi:10.1111/1440–1630.12070.
[49] Trevena-Peters J, McKay A, Ponsford J. Activities of daily living retraining and goal attainment during posttraumatic amnesia. Neuropsychol Rehabil. 2019;29(10):1655–1670. doi:10.1080/09602011.2018.1441033.
[50] Udovicich A, Edbrooke L, Brown T, et al. Achieving patient-centred goals in oncology: a retrospective analysis of a domestic activities of daily living group. Br J Occup Ther. 2020;83(12):773–779. doi:10.1177/0308022620918757.
[51] Gustafsson L, McKenna K. Is there a role for meaningful activity in stroke rehabilitation? Top Stroke Rehabil. 2010;17(2):108–118. doi:10.1310/tsr1702–108.
[52] Kelly F, Nikopoulos CK. Facilitating independence in personal activities of daily living after a severe traumatic brain injury. Int J Ther Rehabil. 2010;17(9):474–482. doi:10.12968/ijtr.2010.17.9.78037.

[53] Patterson F, Fleming J, Doig E, et al. Participant evaluation of an inpatient occupational therapy groups programme in brain injury rehabilitation. Aust Occup Ther J. 2017;64(5):408–418. doi:10.1111/1440–1630.12392.

[54] Skidmore ER, Holm MB, Whyte EM, et al. The feasibility of meta-cognitive strategy training in acute inpatient stroke rehabilitation: case report. Neuropsychol Rehabil. 2011;21(2):208–223. doi:10.1080/09602011.2011.552559.

[55] Ngooi BX, Wong SR, Chen JD, et al. Benefits of occupational therapy activity-based groups in a Singapore acute psychiatric ward: participants' perspectives. Occup Ther Ment Health. 2021;37(1):38–55. doi:10.1080/0164212X.2021.1874591.

[56] Nilsson I, Nygåård L. Geriatric rehabilitation: elderly clients' experiences of a pre-discharge occupational therapy group programme. Scand J Occup Ther. 2003;10(3):107–117. doi:10.1080/11038120310016418.

[57] Patil G, Asbjørnslett M, Aurlien K, et al. Gardening as a meaningful occupation in initial stroke rehabilitation: an occupational therapist perspective. Open J Occup Ther. 2019;7(3):1–15. doi:10.15453/2168–6408.1561.

[58] Patterson F, Fleming J, Doig E. Patient perceptions of participation in group-based rehabilitation in an inpatient brain injury rehabilitation setting. Patient Educ Couns. 2019;102(1):148–154. doi:10.1016/j.pec.2018.08.001.

[59] Murray A, Di Tommaso A, Molineux M, et al. Contemporary occupational therapy philosophy and practice in hospital settings. Scand J Occup Ther. 2021;28(3):213–224. doi:10.1080/11038128.2020.1750691.

[60] Kielhofner G. Conceptual foundations of occupational therapy practice. Philadelphia: F. A. Davis Company; 2009.

[61] Spalding K, Gustafsson L, Tommaso DA . Evaluation of an inpatient occupation-based group program using a process evaluation framework. Aust Occup Ther J. 2023;70(1):32–42.

[62] Spalding K, Gustafsson L, Tommaso DA. Exploring patient outcomes after participation in an inpatient occupation-based group: a longitudinal observational cohort study. Am J Occup Ther. 2022;25(6):1–8.

[63] Spalding K, Di Tommaso A, Gustafsson L. Uncovering the experiences of engaging in an inpatient occupation-based group program: the lifeskills group. Scand J Occup Ther. 2022;30(2):1–10.

[64] Hoffmann TC, Glasziou PP, Boutron I, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. BMJ. 2014;348:g1687. doi:10.1136/bmj.g1687.

[65] Nielsen KT, la Cour K, Christensen JR, et al. Lessons learned about occupation-focused and occupation-based interventions: a synthesis using group concept mapping methodology. Scand J Occup Ther. 2020;27(7):481–492. doi:10.1080/11038128.2018.1561940.

[66] Hong QN, Gonzalez-Reyes A, Pluye P. Improving the usefulness of a tool for appraising the quality of qualitative, quantitative and mixed methods studies, the mixed methods appraisal tool (MMAT). J Eval Clin Pract. 2018;24(3):459–467. doi:10.1111/jep.12884.