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## REVIEW

### COCHRANE CORNER

# Goal setting and strategies to enhance goal pursuit in adult rehabilitation: summary of a Cochrane systematic review and meta-analysis

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## ABSTRACT

INTRODUCTION: Goal setting is considered an essential part of rehabilitation, but approaches to goal setting vary with no consensus regarding the best approach. The aim of this systematic review and meta-analysis was to assess the effects of goal setting and strategies to enhance the pursuit of goals on improving outcomes in adult rehabilitation.
EVIDENCE ACQUISITION: We searched CENTRAL, MEDLINE, EMBASE, four other databases and three trial registries for randomized control trials (RCTs), cluster RCTs, or quasi-RCTs published before December 2013. Two reviewers independently screened all search results, then critically appraised and extracted data on all included studies. We identified 39 trials, which differed in clinical context, participant populations, research question related to goal use, and outcomes measured. Eighteen studies compared goal setting, with or without strategies to enhance goal pursuit, to no goal setting.
EVIDENCE SYNTHESIS: These 18 studies provided very low-quality evidence for a moderate effect size that any type of goal setting is better than no goal setting for improving health-related quality of life or self-reported emotional status (N.=446, standard mean difference [SMD]=0.53, 95% confidence interval [CI]: 0.17 to 0.88), and very low-quality evidence of a large effect size for self-efficacy (N.=108, SMD=1.07, 95% CI: 0.64 to 1.49). Fourteen studies compared a structured approach to goal setting to "usual care" goal setting, where some goals may have been set but no structured approach was followed. These studies provided very low-quality evidence for a small effect size that more structured goal setting results in higher patient self-efficacy (N.=134, SMD=0.37, 95% CI: 0.02 to 0.71). No conclusive evidence was found to support the notion that goal setting, or structured goal setting in comparison to "usual care" goal setting, changes outcomes for patients for measures of participation, activity, or engagement in rehabilitation programs.
CONCLUSIONS: This review found a large and increasing amount of research being conducted on goal setting in rehabilitation. However, problems with study design and diversity in methods used means the quality of evidence to support estimated effect sizes is poor. Further research is highly likely to change reported estimates of effect size arising from goal setting in rehabilitation.

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**Key words:** Goals - Systematic review - Meta-analysis - Patient-centered care - Rehabilitation - Patient care planning.

## Introduction

Goal setting has long been considered an essential part of the rehabilitation process.[1, 2] Rehabilitation can be thought of as a problem-solving activity in which clinical assessments and discussions with patients and family members inform the selection of goals, which are then intended to guide decision-making around therapeutic interventions. Goal setting has consequentially become a standard of best practice for health

professionals engaged in rehabilitation internationally.[3-5]

However, deciding how goal setting is best implemented in rehabilitation is complicated. A multitude of approaches to goal setting exist. Different professional groups use different approaches to goal setting, with some approaches designed for general rehabilitation populations and others targeting specific clinical groups.[6] Also the processes by which goals are selected can be very diverse. When describing an approach to goal selection consideration needs to be given to who is involved in selecting goals; how goals are identified and prioritized; the recommended characteristics of the actual goals set such as how goals are written; and the recommended content of goals set, *e.g.* what is considered an acceptable topic for a goal. The ways goals are subsequently used in clinical practice also differ. This includes the way goals are (or are not) used in team meetings or patient meetings; how feedback on progress towards goals is monitored and communicated, and to whom. Finally, the intended purposes of setting and having goals also varies, with different approaches to goal setting serving different ends.[6-8]

Goal setting has substantial face validity as a method to enhance communication and collaboration within rehabilitation teams and seems like it should be a good way to improve patient motivation and engagement in rehabilitation activities. Indeed, ample evidence exists from research in psychology to demonstrate that the right kinds of goals can have a significant effect on human performance in general.[9, 10] It is less clear what the essential elements of good goal setting practice might be or how research on goal setting in able-bodied populations translates to groups of people recovering from injury or disabling conditions. It is also unclear how much time, which might be better spent on other therapeutic activities, should be invested in goal setting.

In order to address such questions we conducted a Cochrane review to assess the effects of goal setting in adult rehabilitation. Our earlier review, published almost a decade ago, reported that while there was some evidence that goals could influence immediate patient performance on set tasks, for example during a single treatment session, and could impact on patient adherence to treatment regimes, there was no consistent evidence for any generalizable effects on patient outcomes following whole rehabilitation programs.[11] This rela-

tively inconclusive finding of no consistent, measurable effect of goal setting on patient outcomes was reproduced in two further systematic reviews, both of which focused specifically on stroke populations.[12, 13]

Our recent Cochrane review, a summary of which is reported in this paper, provided a comprehensive update and extension of our systematic review from 2006.[11] This review differs from all past systematic reviews on rehabilitation goal setting in a several key ways. Firstly, the review has followed a pre-published method.[14] Secondly, it is far more comprehensive than any previous review, involving the screening of over 9000 titles and abstracts, including non-English publications and grey literature such as unpublished research theses and conference presentations. Thirdly, we categorized papers on the basis of the type of comparison being explored in included trials. For example, we separately analyzed studies that used therapy with no goal setting as the control group versus studies which used 'usual care' goal setting as the control intervention. Finally, for this review we were able to undertake meta-analyses on key outcome data, which had not previously having been attempted.

The aim of this review was to assess the effects of goal setting, and strategies to enhance goal pursuit, such as goal planning and feedback on progress towards goals, on health outcomes in adults with acquired disabilities participating in rehabilitation.

## Evidence acquisition

Eligible studies were randomized controlled trials (RCTs), cluster-RCTs, or quasi-RCTs that investigated the effects of establishing or negotiating rehabilitation goals, with or without additional strategies to enhance goal pursuit. Studies had to involve people receiving rehabilitation for a disabling condition that occurred in adulthood, *i.e.* after 16 years of age. We included studies involving people with physical impairments arising from conditions involving the musculoskeletal, neurological, cardiac, respiratory, sensory, or endocrine and metabolic systems, as well as those involving people with mental health conditions. For the purpose of the review, rehabilitation was defined as "a process aimed at enabling persons with disabilities to reach and maintain their optimum physical, sensory, intellectual, psychiatric and/or social functional levels, thus providing them

with the tools to change their lives towards a higher level of independence" (p. 290).[15] We excluded studies investigating the effects of goal-directed therapy in the context of acute medical care, for example studies of goal-directed management of acute sepsis in emergency medicine. We also excluded studies that investigated the application of goal setting to populations of non-disabled people such as in public health or obstetric contexts.

We defined the term "rehabilitation goal" as "a desired future state to be achieved by a person with a disability as a result of rehabilitation activities [where] rehabilitation goals are actively selected, intentionally created, have purpose and are shared (wherever possible) by the people participating in the activities and interventions designed to address the consequences of acquired disability" (p. 9).[16] Furthermore, we used the term "goal setting" to refer to "the establishment or negotiation of rehabilitation goals" (p. 9-10).[16] These definitions excluded research involving manipulation of implicit goals as the independent variable in a clinical study where, for example, goals were implied without being directly stated or even necessarily consciously set. These definitions also excluded goals set at an organizational or community level, such as research on health service performance or goals for population-level interventions.

In addition to studies involving just goal setting, we included studies looking at the effect of activities to enhance goal pursuit. We defined the term "goal pursuit" as "activities related to how rehabilitation goals are communicated, used or shared that are intended to enhance how effective or successful people are in working towards those goals" (p. 10).[16] This included the development of plans or strategies to achieve stated rehabilitation goals, the use of written or verbal feedback on progress towards rehabilitation goals, and strategies to enhance a person's commitment to their rehabilitation goals such as peer discussion of progress towards goals or use of posters or electronic devices to remind people about their goals.

We excluded studies that focused solely on investigating the effects of goal setting compared to some other intervention intended to influence human cognition or behavior such as counseling. We also excluded any studies that did not adequately control for aspects of other therapies separate to the goal setting intervention. This meant that we excluded studies where goal setting formed only one part of the program of rehabilitation under investigation.

*Outcomes*

Our main outcomes of interest were: 1) health related quality of life or self-reported emotional status; 2) participation outcomes as defined by the International Classification of Function, Disability and Health (ICF);[17] and 3) activity outcomes as defined by the ICF.[17] We also investigated outcomes related to: body structure and function as defined by the ICF,[17] patient self-belief such as self-efficacy, patient motivation and engagement in rehabilitation, individual goal attainment, satisfaction with care, and adverse outcomes such as complications, morbidity, mortality or readmission rates. In this paper we only report analyses about the main outcomes, plus patient engagement in rehabilitation and self-efficacy.

*Search strategy*

We searched the following electronic databases from their date of inception to December 2013: The Cochrane Central Register of Controlled Trials (CENTRAL); MEDLINE (OvidSP); EMBASE (OvidSP); PsycINFO (OvidSP); CINAHL (EBSCOhost); AMED (OvidSP); Proquest Dissertations and Theses database. We also searched three clinical trial registries (the WHO Clinical Trials Portal, the Australian New Zealand Clinical Trials Registry, and Current Controlled Trials). The search strategy was developed in consultation with the Cochrane Consumer and Communication Group and is available in the published Cochrane review.[16] We contacted experts in the field and authors of included studies for information about other relevant studies we might have missed, and we screened the reference lists of all included studies for other possible trials.

*Study selection*

Two reviewers (W.L. and R.S.) independently screened all search results. Full texts were screened where study titles and abstracts provided insufficient information to make a decision about inclusion. Differences of opinion about inclusion were resolved by discussion, with input from other co-authors as needed.

*Assessment of quality*

Two reviewers (W.L. and R.S.) independently critically appraised all included studies for risk of bias. A standard electronic form was used. Specifically, we assessed risk of bias arising from: random sequence generation, allocation concealment, blinding of participants and therapy personnel, blinding of outcomes assessment, completeness of outcome data, selective outcome reporting, and other sources of bias including recruitment bias and baseline imbalance in likely important covariates. We conducted these risk of bias assessments in accordance with the Cochrane Handbook for Systematic Reviews of Interventions.[18] We resolved differences of opinion regarding risk of bias by discussion, with input where necessary from other co-authors.

## Data extraction

Two reviewers (W.L. and R.S.) independently extracted all data using a standardized electronic form. This included data on the intervention aims, study aims, study design, methods used, participants' demographics, characteristics of the study setting including geographic location, specific clinical context, co-interventions being provided alongside goal setting, and outcome measures used. We also extracted data on the characteristics of the goal setting strategies, including: the name of the goal setting approach, the health professionals involved, the training of health professionals in the goal setting method, the level of patient and/or family involvement in goal setting, written and verbal communication strategies used to make selected goals explicit, processes for development of any plans for goal achievement, whether or not goals were made public, for example to other patients, or kept private, whether written or verbal reminders about goals were used during the course of rehabilitation, whether written or verbal feedback on progress towards goals was provided and to whom, whether written agreements or contracts for rehabilitation goals were used, whether patient commitment to stated goals was evaluated, the level of goal difficulty and how this was measured, and the targeted level of functioning for stated goals, such as body structure and function, activity, or participation.

We extracted relevant outcome data from each included study. Outcome data were categorized by outcome type including health related quality of life or self-reported emotional status, participation-level data, and activity-level data. Where individual studies reported data from more than one measure related to single outcome type, for example two measures of activity limitation, we only extracted data from one of the measures in the study following a pre-specified process to choose between two or more possible measures. To begin with, if authors of an included trial had named a measure as the primary outcome for their study, we selected that as the data to extract for our review. If authors did not specifically name a primary outcome, but used a specific measure for the power calculation for their study, we treated that as if it were the primary outcome measure. If there was no apparent primary outcome for a study but multiple measures related to a single outcome type of interest, we then ranked the outcome data by effect size (calculated from the reported data) and extracted the median effect estimate. When there was an even number of measures related to a single outcome type in an individual study, we took the measure with the lowest of the two middle effect estimates for inclusion. Where outcomes were measured at more than one time point, we only took the data at the last reported time point.

For all continuous variables, we extracted sample sizes, means and standard deviations for each intervention and control group. We then reported on the mean difference (MD) for each outcome in each study along with the 95% confidence interval (CI) for that MD. For all dichotomous variables we extracted data on the number of people with that outcome or event and the total number of people for whom those data had been collected in each intervention and control group. We then reported on the risk ratio (RR) for each dichotomous variable in each study along with the 95% CIs. If an individual study had more than two comparison groups we combined data for all relevant experimental groups in the study into a single intervention group, and combined data from all relevant control groups into a single control group. Likewise, where applicable and possible, we adjusted the extracted data to deal with unit of analysis issues arising from the use of cluster randomization in included studies. Details of all decisions regarding adjustments to outcome data are made explicit in the full Cochrane review where they occurred.[16]

Where data were missing from a study regarding the study method, goal setting approach, or outcome data, we attempted to contact the study authors to obtain the

missing information. If we were unable to contact the study authors, we analyzed the studies as reported. All data were entered into RevMan by the first author (W.L.) and checked for accuracy by another author (R.S.).

### Data analysis

We categorized all included studies by the type of comparison being investigated. There were four comparison types:

1. a structured approach to goal setting, with or without strategies to enhance goal pursuit, in comparison to no goal setting, or

2. a structured approach to goal setting, with or without strategies to enhance goal pursuit, in comparison to 'usual care' that could involve some goal setting, but where no structured or required approach was followed, or

3. interventions to enhance goal pursuit in comparison to no intervention to enhance goal pursuit, or

4. one structured approach to goal setting, with or without strategies to enhance goal pursuit, in comparison to another structured approach to goal setting, with or without strategies to enhance goal pursuit.

If individual studies involved more than one intervention or control group, it was possible for that study to be included in more than one comparison type. However, we analyzed and synthesized findings in each of these four comparison types separately.

Where appropriate, we used meta-analysis methods to pool outcome data in order to calculate effects associated with the comparison types listed above. When similar types of outcomes were reported using different types of measures, we used standard mean differences (SMD) with 95% CIs to calculate effect estimates. We conducted all analyses according to guidelines in the Cochrane Handbook for Systematic Reviews of Interventions.[18] Where meta-analysis was not possible we reported findings descriptively. We assessed quality of evidence arising from this analysis using the Grades of Recommendation, Assessment, Development and Evaluation (GRADE) as recommended in the Cochrane Handbook.[18]

We planned in advance that if there were sufficient data, defined as at least 10 studies for a given outcome, and if appropriate (*e.g.* studies could be clearly categorized on the basis of subgroup types) we would conduct

subgroup analysis to examine the effects of goal setting on the basis of: level of patient and/or family involvement in goal selection; the level of the ICF at which goals were set; level of goal difficulty; and patients with and without cognitive or psychiatric impairments. We also planned to undertake sensitivity analysis to examine the influence of studies at high risk of bias on the review findings.

## Evidence synthesis

### Study characteristics

Our search resulted in the identification of 9019 potentially relevant titles after removing duplicates. On screening titles and abstracts, we excluded 8868 papers, identifying 151 potentially eligible publications. We reviewed these in full text, excluding 100 publications (Figure 1). The remaining 51 publications related to 39 separate trials with seven studies being published across 18 articles, conference presentations, and theses (Table I).

Of these 39 trials, 18 compared a structured approach to goal setting, with or without strategies to enhance goal pursuit, to no goal setting.[19-42] For convenience, we refer to these trials as "Comparison 1". Fourteen trials compared a structured approach to goal setting, with or without strategies to enhance goal pursuit, to "usual care" that may have involved goal setting but where no structured approach to goal setting was followed (Comparison 2).[43-61] Two trials compared the addition of a strategy to enhance goal pursuit (in both cases, the use of information technology to help recall of goals) to no additional strategy to enhance goal pursuit (Comparison 3).[62, 63] Nine trials compared one structured approach to goal setting, with or without strategies to enhance goal pursuit to another structured approach to goal setting and goal pursuit (Comparison 4).[19, 21-23, 54, 64-69]

The remainder of this paper presents findings from Comparisons 1 and 2 as these were the analyses that provided the most information about the effect of goal setting on patient outcomes in rehabilitation. Only two small RCTs contributed data to Comparison 3. Trials in Comparison 4 were too diverse in terms of the research questions being asked to permit anything more than descriptive presentation of findings so that meta-analyses were not possible, with these descriptive accounts frequently limited by the small size of the trials or significant problems with risk of bias. More details
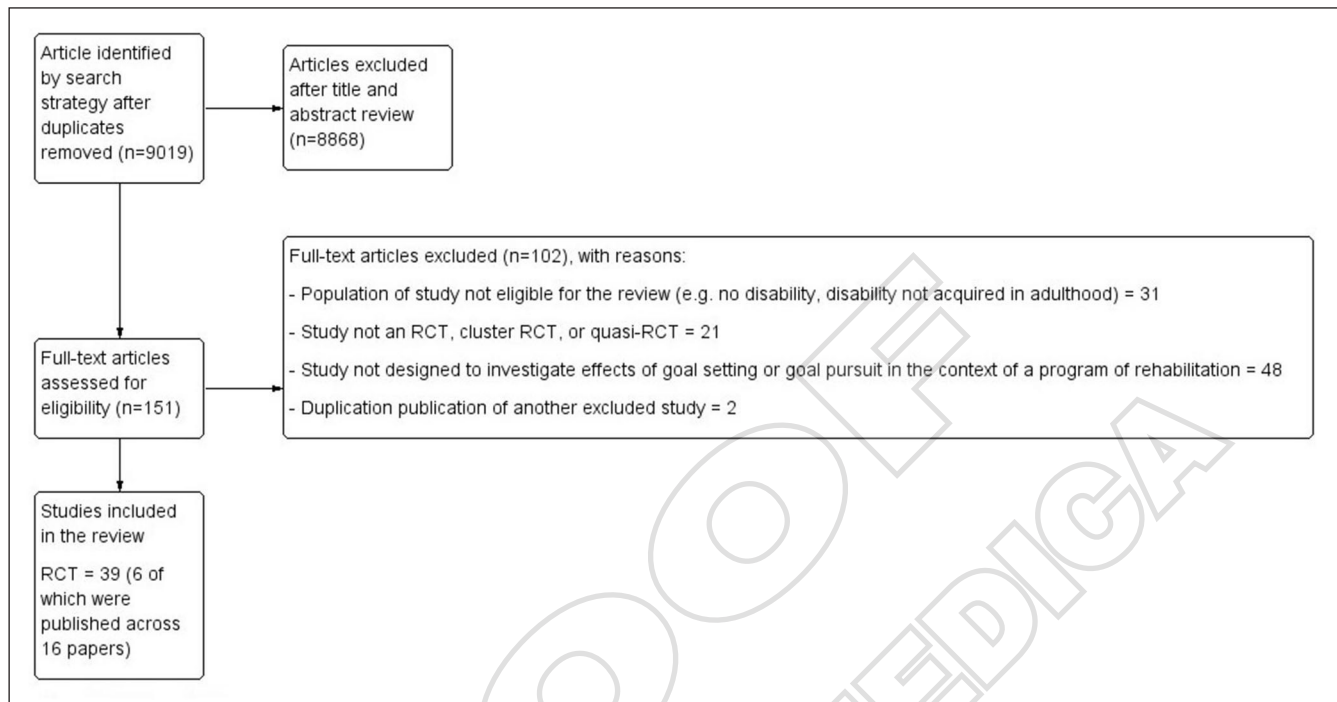
Figure 1.—Article selection process.

TABLE I.—*Included trials published in more than one publication.*

| First publication of trial results | Other publications reporting study methods or outcomes related to the same trial |
| --- | --- |
| Åsenlof (2005) [44] | Åsenlof (2006) [45]; Åsenlof (2009) [46] |
| Blair (1991) [21] | Blair (1995) [22] |
| Duncan (2003) [28] | Duncan (2002) [27] |
| Jonsdottir (2012) [52] | Jonsdottir (2012b) [51] |
| Ostelo (2003) [56] | Ostelo (2000) [58]; Ostelo (2004) [57] |
| Scott (2004) [37] | Ranta (2000) [36]; Setter-Kline (2007) [38]; Watson (2001) [42] |
| Sewell (2005) [40] | Sewell (2001) [39] |

on the findings from trials in Comparisons 3 and 4 are presented in the full Cochrane review.[16]

Overall, the studies included in the meta-analyses varied widely in terms of patient populations, clinical context, approaches to goal setting, and the types of outcomes data collected. Information about the characteristics of trials in Comparison 1 and 2 is presented in Tables II, III.

### Assessment of risk of bias

Risk of bias arising from the assessment of trials in Comparison 1 and 2 is presented in Table IV. The most common problem was blinding of participants and personnel. This was unsurprising given that goal setting usually requires active involvement of patients and their treating health professionals in order to be implemented. The next two biggest contributors to higher risk of bias were unblinded outcome assessment and incomplete data collection, with 14 out of 32 trials in Comparison 1 and 2 being at high risk of bias due unblinded outcome assessment, and 13 out of 32 trials in Comparisons 1 and 2 being at high risk of bias due to incomplete data collection.

### Comparison 1: Structured approach to goal setting, with or without strategies to enhance goal pursuit, in comparison to no goal setting

Eight studies (total N.=446) in this comparison group contributed data on health-related quality of life or self-reported emotional status.[21, 22, 24, 28-31, 37, 40] The meta-analysis showed an increase in health-related quality of life or self-reported emotional status when some form of goal setting, with or without additional strategies to enhance goal pursuit, was used (SMD=0.53, 95% CI: 0.17 to 0.88; Figure 2). This sug-

TABLE II.—*Characteristics of trials in Comparison 1.*

| Study | Method | Participants | Intervention group(s) | Control group(s) | Outcomes |
|---|---|---|---|---|---|
| Bassett (1999) [19] | RCT | 74 people receiving outpatient physiotherapy for musculoskeletal injuries | *Group 1* (N.=25): Therapy with long term and short term goals set in collaboration between the patient and the treating therapist. *Group 2* (N.=24): Therapy with long term and short term goal prescribed by the therapist. *Approach to goals:* Goals documented for patients; achievable, realistic goals emphasized; activity-based goals emphasized; progress towards goals monitored and shared; goal commitment not evaluated. | Therapy with no goal set (N.=25). | Self-reported exercise completion; degree of symptom relief; number of treatment session required; percentage improvement in range of motion; percentage improvement in muscle strength (all measured on treatment completion). |
| Bell (2003) [20] | RCT | 73 people with mental health conditions participating in a vocational rehabilitation program | Support work placement (26 weeks) with peer group-based goal setting and weekly discuss of progress towards goals (N.=30). *Approach to goals:* Collaboratively-set goals; goals documented for patients; plans for goal achievement and progress discussed weekly in peer context; goal difficulty not stated; goal commitment not evaluated. | Support work placement (26 weeks) without goal setting (N.=33). | WBI; total hours worked over 26 weeks; total weeks worked over 26 weeks; Intrapsychic foundation and Interpersonal function subscales of the Quality of Life Scale (measured at 26 weeks). |
| Blair (1991) [21, 22] | Cluster RCT | 89 older adults in nursing care home with age-related disabilities | *Group 1* (N.=40): Goal setting to improve performance on self-care tasks plus operant behavior management. *Group 2* (N.=19): Goal setting to improve performance on self-care tasks without operant behavior management. *Approach to goals:* GAS; patient helped select goals from predetermined list; goals informed nursing care plan; achievable, realistic goals emphasized; activity-based goals emphasized; goal commitment not evaluated | No goals | GAS; Rosenburg Self-Esteem Scale (measured at 6, 8, and 16 weeks). |
| Blair (1996) [23] | RCT | 15 older adults in nursing care home with age-related disability | *Group 1* (N.=5): Goal setting to improve performance on self-care tasks plus operant behavior management. *Group 2* (N.=5): Goal setting to improve performance on self-care tasks without operant behavior management. *Approach to goals:* GAS; patient helped select goals from predetermined list; goals informed nursing care plan; achievable, realistic goals emphasized; activity-based goals emphasized; goal commitment not evaluated. | No goals | GAS (measured at 6, 8, and 16 weeks). |
| Coote (2012) [24] | RCT | 64 people with clinical depression | Goal setting and planning skills program (N.=30). *Approach to goals:* Patient-directed goal selection; all goals documented by patient; goal difficulty not reported; goal focus not reported; one phone call from therapist to remind patients about goals after two weeks; progress towards goals self-monitored. | Wait list control (N.=34) | Positive and Negative Affect Scale; SLS; Centre for Epidemiological Studies-Depression Scale (measured at 5 weeks). |
| Coppack (2012) [25] | RCT | 48 people with chronic low back pain | Therapist-directed exercise with collaborative goal planning (N.=16). *Approach to goals:* Goals set based on Personal Construct Theory; patients involved in goal selection; goals linked to exercise plan; documentation of goal for patients not reported; level of goal difficulty not reported; progress on goals discussed during program; goal commitment not reported. | Control 1 (N.=16): Therapist-directed exercise without goal setting. Control 2 (N.=16): Self-directed exercise without goal setting. | SIRAS; SIRBS; Biering-Sørensen test (measured at day 15). |
| Cross (1971) [26] | RCT | 45 people following surgery for orthopedic conditions | Dietary education with dietary goals (N.=15). *Approach to goals:* No named approach; goals prescribed by health professionals; plan to achieve goals prescribed by health professionals; no reporting of whether goals were documented for patients; goal commitment not reported. | Dietary education without goals (N.=15). (A second control group receiving no dietary education and no goals also involved, but excluded from analysis as deemed irrelevant to the review.) | Adherence to recommended food selection over three days (measured at day 3). |
| Duncan (2003) [27, 28] | RCT | 16 people receiving cardiac rehabilitation | Six month exercise program (12 weeks supervised, 12 weeks unsupervised) with goals related to adherence to the program (N.=8). *Approach to goals:* Goals prescribed by health professionals; goals documented for patients in exercise diaries; goal difficulty not reported; goal commitment not reported; progress towards goals presented monthly to patients. | Six month exercise program (12 weeks supervised, 12 weeks unsupervised) without goals (N.=8). | VO$_2$ max; BDI; Piper Fatigue Scale; 6-Minute Walk Test; Minnesota Living With Heart Failure; self-reported number of home exercise sessions completed (measured at 12 and 24 weeks). |

TABLE II.—*Continues from previous page.*

| Study | Method | Participants | Intervention group(s) | Control group(s) | Outcomes |
|---|---|---|---|---|---|
| Evans (2002) [29] | Quasi-RCT | 39 people receiving physiotherapy for sporting injuries requiring surgery | Goal setting with a sport psychologist, weekly for five weeks, in addition to physiotherapy (N.=13). *Approach to goals:* Collaboratively set goals; patient access to documented goals unclear; goal difficulty not reported; goal focus on body structure function or activities; goal progress discussed weekly, goal commitment not reported. | Control 1: (N.=13) Informal support from sport psychologist, weekly for five weeks, with no goal setting, in additional to physiotherapy. Control 2: (N.=13) Physiotherapy with no sport psychology or goals. | Self-reported exercise adherence; therapist-rated adherence; self-efficacy and treatment efficacy subscales of SIRBS; "Dispirited" and "Reorganization" subscales of PRSII (measured at 5 weeks). |
| Fredenburgh (1993) [30] | RCT | 30 people with mental health conditions | Counselling with a community health nurse with goal setting (N.=15). *Approach to goals:* Based on King's Theory of Goal Attainment; collaboratively set goals; goal difficulty not reported; goal documentation not reported; goal commitment not reported; no discussion of goal progress. | Counselling with a community health nurse without goal setting (N.=15). | Derogatis Stress Profile Instrument (measured at fourth session, after 2-4 weeks). |
| Harwood (2012) [31] | RCT | 172 people living in community, 6-12 weeks after stroke | Eighty minute "take charge" intervention involving people with stroke and families learning how to do self-directed goal setting and goal planning (N.=46). *Approach to goals:* Family-directed goal setting; goals documented by family; goal difficult not specified; goal topics structured by a workbook; goal commitment not report; progress self-monitored. | Thirty minute general stroke education (N.=39). (Two extra treatment groups, receiving an inspirational DVD involving ethnicity-matched peers also included, but excluded from analysis as deemed irrelevant to the review.) | SF-36 PCS; SF-36 MCS; Barthel Index; Frenchay Activities Index; BP; dependency on others; use of rehabilitation service; mortality. |
| Howell (1986) [32] | RCT | 27 people with mental health conditions | Occupational therapy directed towards collaboratively set goals (N.=11 completing intervention). *Approach to goals:* GAS; documentation of goals for patients not reported; goal difficulty not reported; goal commitment not reported; monitoring of progress not reported; reminder provided about goals weekly. | Occupational therapy involving of weekly clinical reviews with positive social reinforcement but no formal goals (N.=13 completing intervention). | GWPS; SSBRS; GAS score for "Theoretical" GAS goals. |
| Iacovino (1997) [33] | RCT | 68 people after cardiac bypass surgery | Group meeting with peers to set individual work-related goals, plan goal achievement, and monitoring of progress towards goals over four weeks (N.=22 completing intervention). *Approach to goals:* Collaboratively-set goals; strategies to achieve goals discussed weekly; patients documented own goals and goal progress; challenging and difficult but attainable goals emphasised; all goals work related; goal commitment formally evaluated. | Video-based education and discussion of general work management, with a group of peers (N.=24 completing intervention). | Return to work; % weeks worked; self-efficacy; intention to return to work; Commitment Scale of WVI; Conscientiousness Scale of the NEO-Five Factor Inventory; CMTS; SLS; Self-Rating Depression Scale; job satisfaction (at 3-6 months). |
| Mann (1987) [34] | RCT | 66 people with hypertension | Dietary education with goal setting (N.=19 completing intervention). *Approach to goals:* Patients selected one goal per week from prescribed list of goals; all goals related to dietary behavior; goal documentation not reported; goal difficulty not reported; goal commitment not reported; goal progress reviewed weekly with patients. | Dietary education without goals setting (N.=19 completing intervention). (A second control group receiving no dietary education and no goals also involved, but exclude from analysis as deemed irrelevant to the review.) | 24-hour self-reported dietary sodium intake and urinary sodium scores; Criterion-referenced achievement test of dietary knowledge; BP (at 6 weeks and 3 months). |
| O'Brien (2013) [35] | RCT | 27 people with osteoarthritis | Twelve weeks of group-based and home-based exercise with goal setting (N.=17). *Approach to goals:* goals collaborative set with patients; goals and plan to achieve goals document for patients; realistic goals emphasised; goal focus on functional performance; action plans signed by patients; reminders about goals not reported; discussion of progress not reported. | Twelve weeks of group-based and home-based exercise without goal setting (N.=9). | SIRAS; adherence to group classes and program completion; self-reported adherence to home exercise; Timed Up and Go; 10 meter Walk Test; Step Test; Six minute Walk Test; Lower Limb Task Questionnaire (at 12 weeks). |
| Scott (2004) [37] | RCT | 88 people with heart failure | Nursing support plus goal setting over eight week period (N.=27). (A second intervention group receiving tailored self-management education also involved, but excluded from analysis as deemed irrelevant to the review.) *Approach to goals:* Based on King's Theory of Goal Attainment; collaboratively set goals; goal difficulty, documentation, commitment, discussion of progress all not reported. | Nursing support without goal setting over eight week period (N.=33). | Confident in management of heart failure; self-efficacy for disease management (at 3, 6, and 12 months); Mental Health Inventory-5, cardiac version of the Quality of Life scale (at 3 and 6 months). |

TABLE II.—*Continues from previous page.*

| Study | Method | Participants | Intervention group(s) | Control group(s) | Outcomes |
|---|---|---|---|---|---|
| Sewell (2005) [39, 40] | RCT | 180 people with chronic lung disease | Individualized exercise program with goal setting. *Approach to goals:* Goal based on COPM and collaboratively set; goals focused on daily activities; documentation of goals for patients not reported; goal difficulty not reported; weekly goal reminders provided. | General exercise program without goal setting. | Physical activity levels; COPM performance and satisfaction scores; Shuttle Walk Test; Chronic Respiratory Questionnaire. |
| Stanhope (2013) [41] | Cluster RCT | 367 people with mental health conditions | Mental health support with collaborative goal setting and care planning (N.=177). *Approach to goals:* Goal collaboratively set and based on life goals; goal reminders provided at each therapy session; no reporting of goal difficulty, goal commitment or goal documentation for patient. | Mental health support without goal setting (N.=190). | Medication adherence and attendance at scheduled appointments (after 11 months). |

BDI: Baseline Dyspnea Index; BP: blood pressure; CMTS: Client Motivation for Therapy Scale; COPM: Canadian Occupational Performance Measure; GAS: Goal Attainment Scaling; GWPS: Griffiths Work Performance Scale; PRSII: Psychological Responses to Sports Injury Inventory; SF-36 MCS: Short Form 36 – Mental Component Summary Score; SF-36 PCS: Short Form 36 – Physical Component Summary Score; SIRAS: Sports Injury Rehabilitation Adherence Scale; SIRBS: Sports Injury Rehabilitation Beliefs Survey; SLS: Satisfaction with Life Scale; SSBRS: Shepherd Social Behavior Rating Scale; VO2max: maximum ventilated oxygen; WBI: Work Behavioral Inventory; WVI: Work Values Inventory.

gests a moderate clinical effect size in favor of goal setting.[18] Substantial heterogeneity in outcome was observed, although seven out of the eight effect sizes favored goal setting. Insufficient studies existed to permit subgroup analysis to further explore reasons for this heterogeneity.

Four studies contributed data on participation, but these data could not be pooled due to lack of reporting of SD in the case of one study and dissimilarity in the measures used for the others.[20, 32, 33, 40] One of these four studies, a trial of goal setting in vocational rehabilitation involved just 11 participants, and reported a MD in favor goal setting on the Total Work Behavior Inventory (MD=16.0, 95% CI: 4.22 to 27.78).[20] The other three studies reported no difference in participation measures between the treatment and control groups.[32, 33, 40]

Four studies (N.=233) contributed data on measures of activity.[28, 31, 35, 40] The meta-analysis showed no difference in activity measures when some form of goal setting, with or without strategies to enhance goal pursuit, was used (SMD=0.04, 95% CI: -0.22 to 0.31; Figure 3). There was no evidence of statistical heterogeneity in these observed outcomes.

Nine studies (N.=369) contributed data on measures of patient engagement that we could pool using standard effect sizes.[19, 20, 25, 26, 28, 29, 33-35] For this meta-analysis we included any measure of patient motivation or patient adherence to therapy or a rehabilitation program. No difference in patient engagement in rehabilitation was found (SMD=0.30, 95% CI: -0.07 to 0.66; Figure 4). There was evidence of substantial heterogeneity

in the observed outcomes however, both in terms of the size and direction of effects. Insufficient studies existed to permit subgroup analysis to further explore reasons for this heterogeneity.

Three studies (N.=108) contributed data on task-specific self-efficacy.[25, 35, 70] Meta-analysis showed a difference in self-efficacy in favor of goal setting, with or without strategies to enhance goal pursuit (SMD=1.07, 95% CI: 0.64 to 1.49; Figure 5). This mean effect estimate suggests a large effect size,[18] and there was little evidence of heterogeneity in these data.

*Comparison 2: Structured approaches to goal setting, with or without strategies to enhance goal pursuit, in comparison to "usual care" goal setting*

Analysis of data arising from studies in this comparison group was complicated by uncertainty regarding the nature of "usual care" goal setting. Of the 14 studies in Comparison 2, only five provided details on how goal setting in usual care was undertaken,[43, 44, 47, 50, 56] with two studies evaluating treatment fidelity to ensure that the intervention and control groups did indeed differ in terms of goal setting.[44, 56] In general however, 'usual care' goal setting was broadly presented as having less patient involvement in goal selection, being less person-centered, and being less focused on personally meaningful activities that patients wanted to pursue. "Usual care" goal setting in three studies also involved less attention to strategies to support behavior change,[44, 54, 56] although different approaches to behavior change were employed in each.

TABLE III.—*Characteristics of trials in Comparison 2.*

| Study | Method | Participants | Intervention group(s) | Control group(s) | Outcomes |
|---|---|---|---|---|---|
| Arnetz (2004) [43] | Quasi-RCT | 77 people with chronic musculoskeletal disorders | Physical therapy with structured goal setting involving a patient-goal checklist and collaborative goal setting (N.=39). | Physical therapy with "usual care" goal setting (N.=38). | General treatment outcome; goal achievement and patient-reported quality of care (measured at completion of treatment). |
| Åsenlof (2005) [44-46] | RCT | 122 people with chronic pain problems | Physical therapy using individually-tailored, goal-oriented behavioral medicine sessions based on the Patient Goal Priority Questionnaire, involving structured goal setting, goal planning, and monitoring of progress towards goals with patients (N.=57). | Physical therapy with "usual care" goal setting (N.=65). | PDI, pain intensity over two weeks; perceived pain control; Swedish versions of the SES and the TSK; five physical performance tests (*e.g.* sit-ups, push-ups, etc.); patient-rating of global improvement, satisfaction with daily living, satisfaction with treatment, confidence in self-management, and application of learned skills (measured at completion of treatment and at 3 months). |
| Cheng (2012) [47] | Cluster RCT | 96 people with chronic disability (from a range of conditions) | Eight weeks of community nursing with structured, collaborative goal setting based on King's Theory of Goal Attainment and GAS (N.=53). | Eight weeks of routine nursing care with "usual care" goal setting (not collaboratively-set) (N.=43). | Percentage of goals achieved; Chronic Disease SES; Disability Index of the HAQ; self-reported health status; Satisfaction Scale in Community Nursing; number of emergency department visits; days of hospitalization; mortality; hospital readmissions (measured at 4, 12, and 24 weeks). |
| Gagné (2003) [48] | Quasi-RCT (a pilot study) | 31 people with chronic disability (from a range of conditions) | Occupational therapy with structured goal setting involving collaboratively-set goals; a patient goal workbook, and daily discussion of goals (N.=15). | Occupational therapy with "usual care" goal setting (not structured; not discussed daily) (N.=16). | Six self-care scores from the FIM (measured after two weeks). |
| Hart (1978) [49] | RCT | 32 people with mental health conditions | Individual psychotherapy with weekly structured goal setting and goal discussion (N.=15). | Individual psychotherapy with a single point for goal setting, but with no particular structure to goal setting and no ongoing goal discussion (N.=15). | Change in GAS scores (measured at 3 months). |
| Holliday (2007) [50] | Quasi-RCT | 201 people in an inpatient neurorehabilitation service | Multidisciplinary rehabilitation with structured, collaborative, interprofessional goal setting, involving a patient goal workbook, patient education in goal setting, and key-worker involvement (N.=101). | Multidisciplinary rehabilitation with "usual care" goal setting (N.=100). | FIM; LHS; General Health Questionnaire; patient-reported involvement in goal setting; patient-reported goal relevance; patient overall satisfaction (measured at end of inpatient rehabilitation). |
| Jonsdottir (2012) [51, 52] | Cluster-RCT (a pilot study) | 8 people with neurological disabilities | Inpatient rehabilitation involving structured goal setting based on use of the ICF core sets (N.=4). | Inpatient rehabilitation involving "usual care" goal setting (N.=4). | Goal achievement (measured after 15 rehabilitation sessions, *i.e.* 3-4 weeks). |
| LaFerriere (1978) [53] | RCT | 65 people with mental health conditions | Counselling involving collaborative, structured goal setting based on GAS (N.=34). | Counselling involving "usual care" goal setting, involving no patient involvement in goal setting (N.=31). | Depression and Anxiety Scale of the Today form of the Multiple Affect Adjective Checklist; Rosenburg's Self-Esteem Scale; a modified Welsh Anxiety Scale; patient-rated satisfaction, motivation, change, use of goals, awareness of goals; therapist-rated patient motivation, change, use of goals (measured 5 weeks after end of therapy). |
| McPherson (2009) [54] | RCT (a pilot study) | 34 people with traumatic brain injury | *Group 1* (N.=12): Six weeks of therapy using Goal Management Training. *Group 2* (N.=10): Six weeks of therapy using Identity Oriented Goal Training. | Usual therapy using "usual care" goal setting (N.=12). | GAS (measured at end of therapy and 3 months). |
| Oestergaard (2012) [55] | RCT | 87 people following spinal surgery for back pain | Inpatient occupational therapy with structured, collaborative goal setting based on the COPM (N.=40). | Inpatient occupational therapy with "usual care" goal setting (N.=47). | Number of problems with ADLs; patient-rated satisfaction and performance in 18 pre-specified ADLs; DPQ; length of hospitalization; duration of sick leave from work (measured at 3 months and 3 years). |
| Ostelo (2003) [56-58] | RCT | 105 people following spinal surgery for back pain | Behavior-graded activity based on structured goal setting (N.=52). | Physical therapy based on "usual care" goal setting (N.=53). | Patient-rated treatment effect; RDQ; TSK; Pain Catastrophizing Scale; Pain Behavior Scale; Pain intensity; severity of main complaint for the two frequently performed activities selected by the patient, SF-36; healthcare costs (measured at 3, 6, and 12 months). |

TABLE III.—*Continues from previous page.*

| Study | Method | Participants | Intervention group(s) | Control group(s) | Outcomes |
|---|---|---|---|---|---|
| Parsons (2012) [59] | Cluster RCT | 205 people with age-related disability | Home-based restorative therapy based on structured, collaborative goal setting using the "Towards Achieving Realistic Goal in Elders Tool" (N.=108). | Standard home care based on "usual care" goal setting (N.=97). | SF-36 Physical Component; SF-36 Mental Component; Mortality (measured at 6 months). |
| Taylor (2012) [60] | Cluster RCT (a pilot study) | 41 people with stroke | Inpatient rehabilitation with structured goal setting based on the COPM (N.=18). | Inpatient rehabilitation with "usual care" goal setting (N.=23). | SEIQOL; SF-36; FIM; Patient Perception of Rehabilitation (measured at 3 months). |
| Woltmann (2011) [61] | Cluster RCT | 80 people with mental health conditions | Community-based case management with structured, collaborative goal setting involving and electronic decision support system (N.=40). | Community-based case management with "usual care" goal setting (N.=40). | Client-rated satisfaction, case manager-rated satisfaction; proportion of goal correctly recalled by clients. |

ADLs: Activities of Daily Living; COPM: Canadian Occupational Performance Measure; DPQ: Dallas Pain Questionnaire; FIM: Functional Independence Measure; GAS: Goal Attainment Scaling; HAQ: Health Assessment Questionnaire; ICF: International Classification of Functioning, Disability, and Health; LHS: London Handicap Scale; PDI: Pain Disability Index; RDQ: Roland Disability Questionnaire; SEIQOL: Schedule for Evaluation of Individual Quality of Life; SES: Self-efficacy Scale; SF-36: Short Form-36; TSK: Tampa Scale of Kinesiophobia.

TABLE IV.—*Risk of bias in included studies in Comparison Groups 1 and 2.*

| Study | Random sequence generation | Allocation concealment | Blinding of participants and personnel | Blinding of outcome evaluation | Incomplete outcome data | Selective reporting |
|---|---|---|---|---|---|---|
| Comparison 1: Structured approach to goal setting, with or without strategies to enhance goal pursuit, in comparison to no goal setting | | | | | | |
| Bassett (1999) [19] | + | + | − | − | − | ? |
| Bell (2003) [20] | + | + | − | − | − | ? |
| Blair (1991) [21, 22] | ? | ? | − | − | ? | ? |
| Blair (1996) [23] | ? | ? | − | − | + | ? |
| Coote (2012) [24] | − | − | − | − | ? | ? |
| Coppack (2012) [25] | ? | ? | ? | + | + | ? |
| Cross (1971) [26] | ? | ? | − | ? | + | ? |
| Duncan (2003) [27, 28] | + | ? | − | ? | ? | ? |
| Evans (2002) [29] | − | − | ? | ? | + | ? |
| Fredenburgh (1993) [30] | + | + | − | − | + | ? |
| Harwood (2012) [31] | + | + | − | ? | − | + |
| Howell (1986) [32] | ? | ? | − | − | ? | ? |
| Iacovino (1997) [33] | ? | ? | − | ? | − | ? |
| Mann (1987) [34] | ? | ? | − | ? | − | ? |
| O'Brien (2013) [35] | + | + | ? | + | − | ? |
| Scott (2004) [37] | + | + | − | ? | − | ? |
| Sewell (2005) [39, 40] | + | + | − | ? | − | ? |
| Stanhope (2013) [41] | + | + | − | − | ? | ? |
| Comparison 2: Structured approach to goal setting, with or without strategies to enhance goal pursuit, in comparison to "usual care" goal setting | | | | | | |
| Arnetz (2004) [43] | − | − | − | − | + | ? |
| Åsenlof (2005) [44-46] | + | + | − | − | − | ? |
| Cheng (2012) [47] | + | − | − | ? | − | ? |
| Gagné (2003) [48] | − | − | − | + | + | ? |
| Hart (1978) [49] | ? | ? | − | − | ? | ? |
| Holliday (2007) [50] | − | − | − | − | + | ? |
| Jonsdottir (2012) [51, 52] | ? | + | − | + | + | ? |
| LaFerriere (1978) [53] | + | + | − | − | − | ? |
| McPherson (2009) [54] | + | + | − | ? | − | ? |
| Oestergaard (2012) [55] | + | + | − | − | ? | ? |
| Ostelo (2003) [56-58] | + | + | − | ? | ? | + |
| Parsons (2012) [59] | + | + | − | ? | + | + |
| Taylor (2012) [60] | + | + | − | ? | + | + |
| Woltmann (2011) [61] | ? | ? | − | ? | − | ? |

(+) Low risk of bias; (?) unclear risk of bias; (−) high risk of bias.
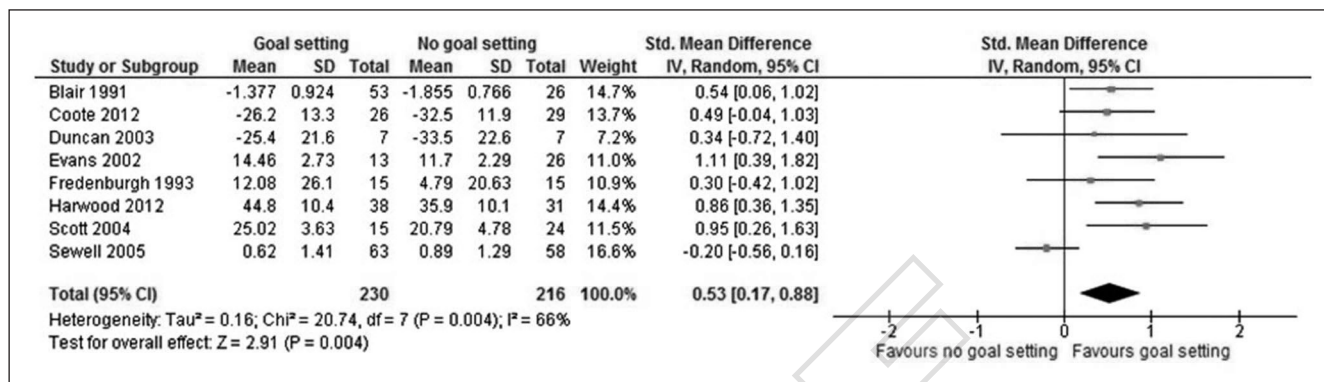
Figure 2.—Forest plot of Comparison 1: goal setting with or without strategies to enhance goal pursuit *versus* no goal setting. Outcome: health-related quality of life or self-reported emotional status.
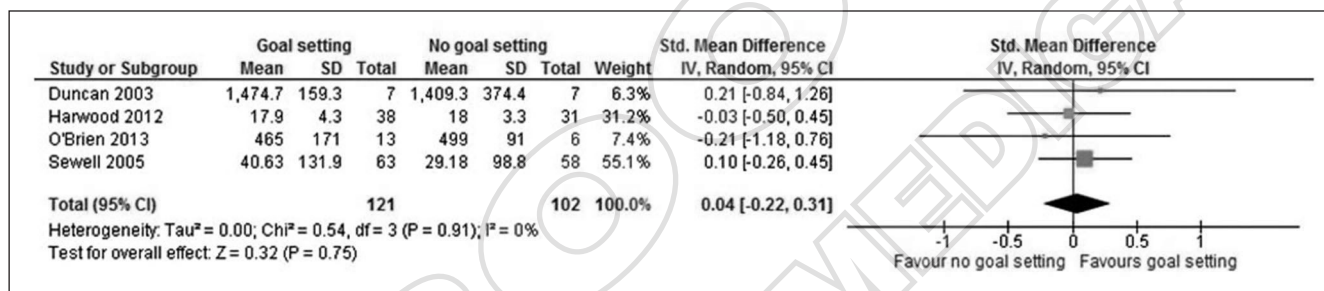


Figure 3.—Forest plot of Comparison 1: goal setting with or without strategies to enhance goal pursuit *versus* no goal setting. Outcome: activity measures.
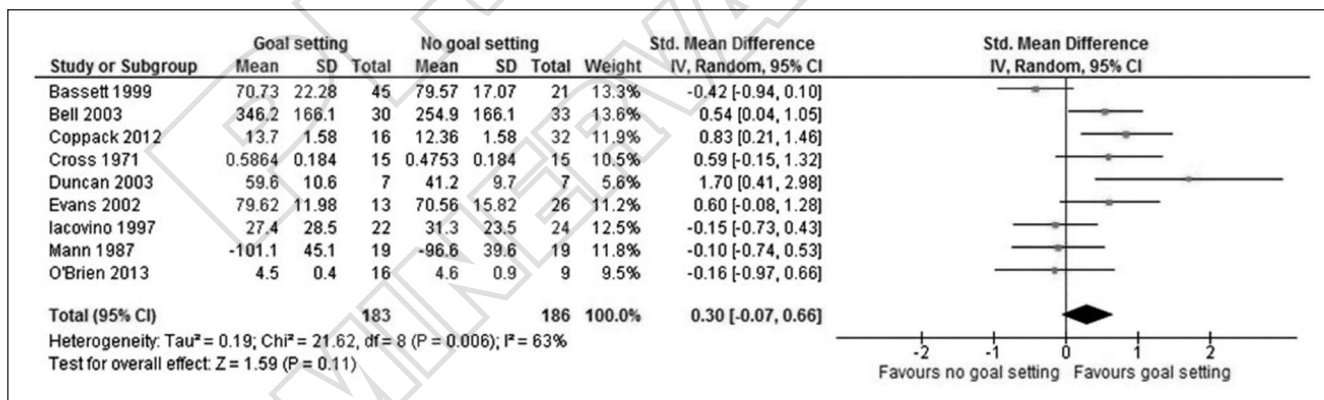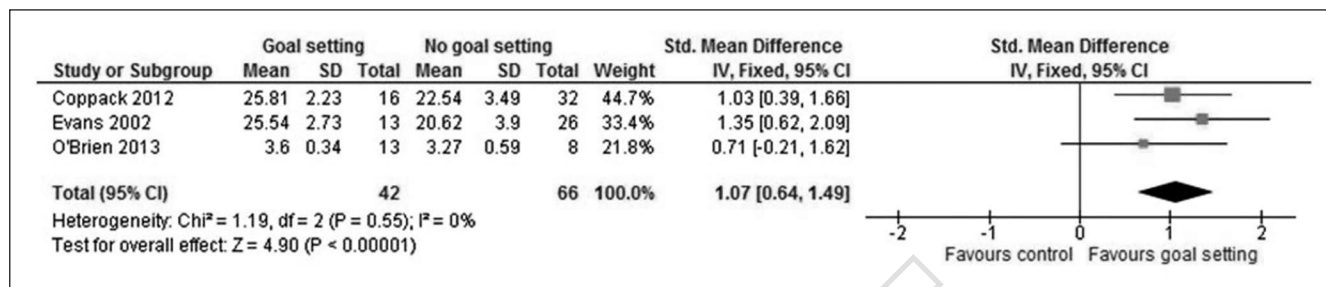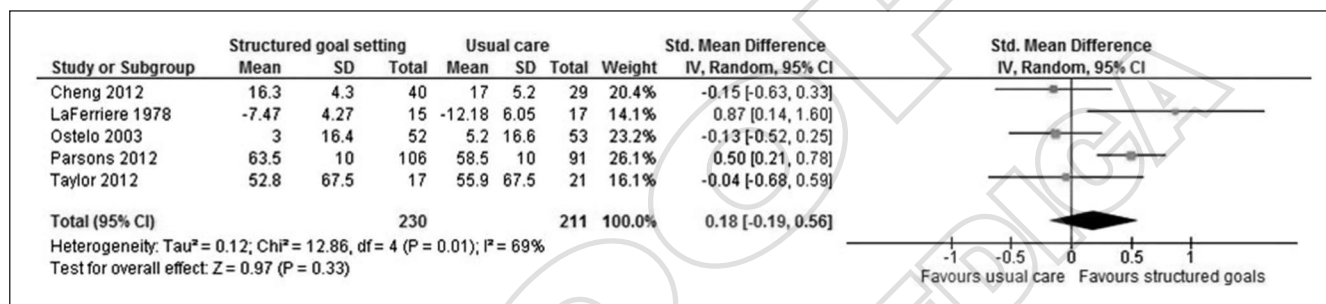


Figure 4.—Forest plot of Comparison 1: goal setting with or without strategies to enhance goal pursuit *versus* no goal setting. Outcome: engagement (motivation and adherence) in rehabilitation.

Five studies (N.=441) in Comparison 2 reported data on health-related quality of life or self-reported emotional status that we could pool using standard effect sizes.[47, 53, 56, 59, 60] This meta-analysis showed no difference between the intervention and control groups (SMD=0.18, 95% CI: -0.19 to 0.55; Figure 6). Substantial heterogeneity in these data was observed, with insufficient studies existing to permit meaningful subgroup analysis to explore reasons for these differences.

Only one study reported outcomes using a measure

Figure 5.—Forest plot of Comparison 1: goal setting with or without strategies to enhance goal pursuit *versus* no goal setting. Outcome: self-efficacy.



Figure 6.—Forest plot of Comparison 2: structured goal setting with or without strategies to enhance goal pursuit *versus* "usual care" goal setting. Outcome: health-related quality of life or self-reported emotional status.
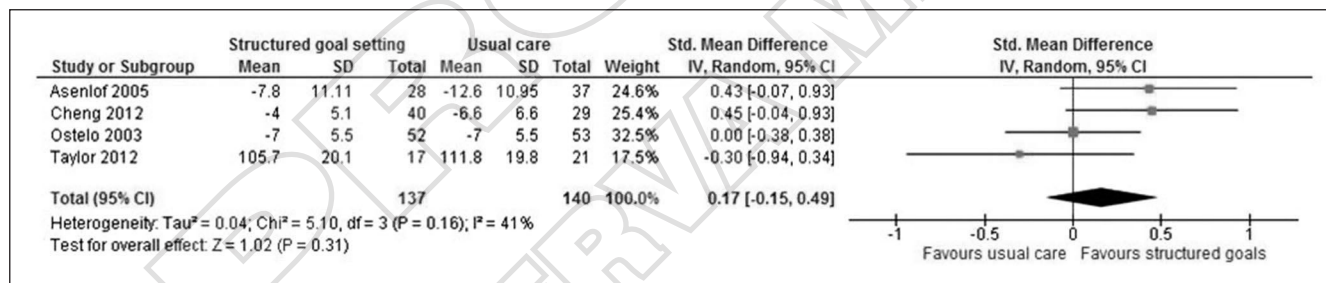


Figure 7.—Forest plot of Comparison 2: structured goal setting with or without strategies to enhance goal pursuit *versus* "usual care" goal setting. Outcome: activity measures.

of participation, the London Handicap Scale.[50] No difference between the structured goal setting and "usual care" goal setting was reported by the trial authors (although no means or SDs for these data were published).

Four studies (N.=277) reported data on activity measures that could be pooled.[44, 47, 56, 60] The meta-analysis showed no difference in data from activity measures between structured goal setting and 'usual care' goal setting groups (SMD=0.17, 95% CI: -0.15 to 0.49; Figure 7). Moderate heterogeneity was observed in these data, but again with insufficient studies to permit subgroup analysis to explore reasons for this heterogeneity.

Only one study reported data from a measure of patient engagement in rehabilitation: therapist-rated and patient-rated scores of patient motivation during therapy.[53] This study reported a small difference in favor of structured goal setting for patient-rated motivation (MD=1.40, 95% CI: 0.43 to 2.37) but not for therapist-rated scores of patient motivation (MD=0.48, 95% CI: -0.41 to 1.37).

Data on self-efficacy was reported on in two studies (N.=134).[44, 47] A meta-analysis showed that structured goal setting, with or without strategies to enhance goal pursuit, resulted in higher general self-efficacy than
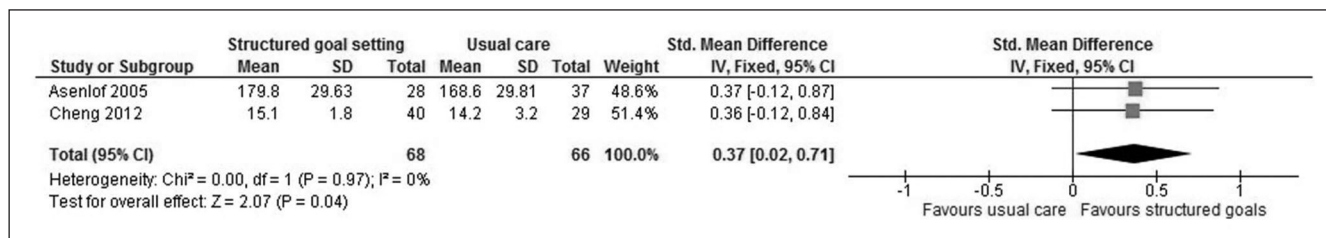
| Study or Subgroup | Structured goal setting | | | Usual care | | | Weight | Std. Mean Difference IV, Fixed, 95% CI | Std. Mean Difference IV, Fixed, 95% CI |
|---|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Total | Mean | SD | Total | | | |
| Asenlof 2005 | 179.8 | 29.63 | 28 | 168.6 | 29.81 | 37 | 48.6% | 0.37 [-0.12, 0.87] | |
| Cheng 2012 | 15.1 | 1.8 | 40 | 14.2 | 3.2 | 29 | 51.4% | 0.36 [-0.12, 0.84] | |
| Total (95% CI) | | | 68 | | | 66 | 100.0% | 0.37 [0.02, 0.71] | |

Heterogeneity: Chi² = 0.00, df = 1 (P = 0.97); I² = 0%
Test for overall effect: Z = 2.07 (P = 0.04)

Favours usual care    Favours structured goals

Figure 8.—Forest plot of Comparison 2: goal setting with or without strategies to enhance goal pursuit *versus* "usual care" goal setting. Outcome: self-efficacy.

"usual care" goal setting (SMD=0.37, 95%: CI 0.02 to 0.71; Figure 8). This is indicative of a small effect size, and the accuracy of this estimate is questionable as we were unable to adjust for clustering in one of these two studies.[47]

## Discussion

This Cochrane review reported on the first ever meta-analyses of outcomes associated with goal setting activities in rehabilitation. The findings suggested that when goal setting, with or without strategies to enhance goal pursuit, was added to rehabilitation, patients appeared to achieve higher levels of health related quality of life or more positive emotion states, and much higher levels of task-specific self-efficacy. We found no evidence however of effects regarding participation restriction or activity limitation, or for changes in patient engagement in rehabilitation. When structured approaches to goal setting, with or without strategies to enhance goal pursuit, were compared to 'usual care' goal setting, there was no observed benefit in terms of health related quality of life, patient-reported emotional status, participation or activity levels. More structured approaches to goal setting were however associated with higher levels of general self-efficacy.

These findings are limited by: an identified risk of bias (which ranged from unclear to high in the studies involved); a high degree of heterogeneity in many of the data sets used for the meta-analyses; wide confidence intervals in the observed outcomes; and small sample sizes. Overall, this downgrades the quality of evidence of these results, and means that we are uncertain about the outcome estimates reported. Further research is very likely to have an important impact on our confidence in the estimates of both the direction and size of effect. While some findings emerged from this review in favor of goal setting in rehabilitation, the quality of this evidence (based on GRADE assessment) should be considered low to very low for these reasons.

Nevertheless, the findings of this review do support the notion that goal setting in rehabilitation may possibly contribute to better outcomes for patients. We speculate that these improvements are more pronounced for subjectively experienced benefits, such as self-rated quality of life, and feelings of personal control such as self-efficacy, rather than with actual physical changes in abilities as measured by changes in activity or participation. It is possible that these subjective outcomes reflect an emphasis in rehabilitation practice that is primarily on person-centeredness and personally-meaningful goals, and that different approaches to goal setting (other than those examined in the studies included in this review) could potentially produce different effects; and that these different approaches may be more beneficial in terms of objective measures of improved health outcomes.

In health psychology, goal setting is recognized as a legitimate strategy for positively influencing patient behavior. Michie and colleagues' taxonomy of behavior change techniques includes not only selection of behavioral goals and outcome-related goals as separate behavior change strategies, but also includes a range of activities related to the application of goals (*e.g.* using goals in action planning and in the monitoring of consequences of behavior).[71] In addition to Michie and colleagues' taxonomy, Hagger and Hardcastle recommend that attention also needs to be paid to interpersonal style when considering behavior change techniques, listing goal setting as a specific example of where interpersonal style is likely to be important.[72] To better understand

how different applications of goals might positively or negatively influence patient or health professional behavior in rehabilitation, considerably more research is required. This research needs to become more sophisticated methodologically than much of the research we identified in this review. Improvements should include better study design and greater specificity of the research questions addressed. Future trials of goal setting in rehabilitation should follow recommendations for studies involving the development and evaluation of complex interventions.[73, 74]

As a complex intervention, goal setting can be viewed as a clinical activity that involves a number of inter-related components, that is dependent on the nature of interactions between health professionals, patients, and family members, and that often requires a high level of flexibility in its implementation. As such, hypotheses about the influence of goal setting on patient behavior and health outcomes, and the methods used to implement goal setting in clinical trials, ought to be based on clearly articulated theories regarding the mechanisms of effect[73, 74]. Notably however, of the 39 trials included in this Cochrane review, 18 (46%) included no mention of an underpinning theory regarding how goal setting might achieve its positive effects. Of the studies that did refer to established goal theories, many did not accurately reflect these theories in the actual implementation of goal setting. Thirteen studies (33%) made reference to Locke and Latham's goal theory when discussing reasons why goals might result in high levels of patient performance in rehabilitation, but only one of these studies actually implemented goal setting in a manner consistent with this theory[67].

An additional consideration relevant to interpreting these findings is that there are many reasons why goal setting may be considered important in rehabilitation,[7, 8] and improving patient outcomes on standardized outcome measures is only one such function. Rehabilitation services may use goal setting in order to address ethical obligation to include patients (and if appropriate families) in decisions about the rehabilitation direction for an individual person. Questions about which approach to goal setting best addresses these moral obligations are not ones that can be easily answered with RCTs. Instead, the bioethical justification for approaches to goal setting should be considered a separate, but equally important issue, which we have discussed elsewhere.[75]

## Conclusion

This review identified 39 clinical trials examining the effects of different aspects of rehabilitation goals on health outcomes for adults with disabilities. Trials used a wide range of different approaches to goal setting in different clinical contexts, and measured a wide range of different outcomes. Overall, these studies provided some evidence that goal setting helps people achieve a higher quality of life or sense of well-being and higher self-efficacy, but this evidence should be considered of very low quality because of limitations in study design and ambiguity in estimates of effect size (*i.e.* arising from heterogeneity in outcome data and wide confidence intervals). Further research is required, but in order to progress our understanding of goal setting in rehabilitation, this research needs to be increasingly sophisticated both in terms of the methods used to test approaches to goal setting and in terms of how theories regarding the effects of goals are made explicit in the design of interventions received by experimental and control groups.

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