

Theories of behaviour change relevant to goal setting practice

POSITION REVIEW

**Identifying and applying psychological theory to setting and achieving
rehabilitation goals**

For Peer Review

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Theories of behaviour change relevant to goal setting practice

ABSTRACT

Background

Goal setting is considered to be a fundamental part of rehabilitation; however, theories of behaviour change relevant to goal setting practice have not been comprehensively reviewed.

Objectives

(i) To identify and discuss specific theories of behaviour change relevant to goal setting practice in the rehabilitation setting.

(ii) To identify 'candidate' theories that offer most potential to inform clinical practice.

Methods

The rehabilitation and self management literature was systematically searched to identify review papers or empirical studies that proposed a specific theory of behaviour change relevant to setting and/or achieving goals in a clinical context. Data from included papers were extracted under the headings of: key constructs; clinical application and empirical support.

Results

Twenty four papers were included in the review which proposed a total of five theories: (i) Social Cognitive Theory, (ii) Goal Setting Theory, (iii) Health Action Process Approach, (iv) Pro-active Coping Theory and, the (v) Self Regulatory Model of Illness Behaviour. The first three of these theories demonstrated most potential to inform clinical practice, on the basis of their capacity to inform interventions that resulted in improved patient outcomes.

Conclusions

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Social Cognitive Theory, Goal Setting Theory and the Health Action Process

Approach are theories of behaviour change that can inform clinicians in the process of setting and achieving goals in the rehabilitation setting. Overlapping constructs within these theories have been identified, and can be applied in clinical practice through the development and evaluation of a goal setting practice framework.

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Introduction

Goal setting is viewed as an essential component of rehabilitation (1-7) and a core skill of rehabilitation practitioners (3). However, there is no standard use of terminology in relation to goal setting - it has been described in the rehabilitation literature and clinical documentation a variety of ways including: goal planning, care planning, setting aims/ objectives and action planning. Neither is there an agreed terminology regarding goal setting's component parts (5,8-11). Further more, there is not a universally accepted definition of goal setting in the rehabilitation practice. The National Clinical Guidelines for Stroke (2008) (2) refer to goal setting as "the identification of and agreement on a behavioural target which the patient, therapist or team will work towards over a specified period of time." In this paper, our use of the term goal setting will be based on this definition as it acknowledges that in the rehabilitation practice, goal setting is a collaborative process that involves identifying behavioural goals, then working towards achieving them then over a specific period of time.

In spite of its inclusion in clinical guidelines (1,2) and assumed status as an important rehabilitation intervention, the practice of setting and achieving rehabilitation goals in the clinical setting is highly variable (2,5,6,8,12) and often problematic (13-16).

Clinicians can be faced with difficult issues such as: trying to set meaningful goals in a hospital environment, setting achievable goals for patients with unrealistically high expectations and trying to negotiate goals with patients who are not ready to accept the consequences of their health condition or who appear to lack motivation (13).

Helping patients translate general goals such as, 'I want to get back to normal' into specific goals that present an appropriate challenge in the here and now can be a

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difficult process (15). Additionally, there may be lack of agreement between clinicians and patients regarding what goals are most important and deciding what constitutes successful goal achievement (17). Patients who have cognitive and/or communication deficits can be particularly difficult to engage in the goal setting process in a collaborative way (12,15,18-20).

The evidence base to support the clinical efficacy of goal setting in rehabilitation is not robust (9-11,14). A recent, well conducted, systematic review examined the effectiveness of setting goals in rehabilitation settings (5). It concluded that whilst there is some evidence that setting goals can improve patient adherence to rehabilitation programmes, the evidence to support its impact on health-related outcomes was inconsistent. The authors noted that methodological limitations of many studies and lack of clarity about the purpose of goal setting interventions being investigated made it difficult to draw firm conclusions about goal setting's effectiveness in rehabilitation.

Development of the evidence base is further hindered because goal setting practice is largely a-theoretical, with a common sense approach to implementation rather than practice based on a sound theoretical rationale (4,21). Wade (2005) (pg812) (21) asserted that, *'A theory or explanatory model is essential to analyse any situation, to decide on actions and to define the concepts and words used'*. The lack of a clearly articulated theoretical basis for goal setting is likely to contribute to the dilemmas experienced in clinical practice, and the lack of a robust evidence base to support it. It may also go some way to explaining why *'The goal setting process for many patients*

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(and clinicians) is marked by frustration, difficulty and perceived failure' (14)
(pg1175).

In view of the identified gaps in both evidence and theory, and the clinical dilemmas experienced in rehabilitation practice, we believe that goal setting is an important complex intervention that should be developed and evaluated in a systematic way.

Development of a theoretically informed goal setting practice framework with clear key components and defined mechanisms of action should: (i) guide goal setting interventions in a structured way, providing clinicians with a shared understanding of what to do, how to go about doing it and justify why they are doing it; (ii) use terminology and concepts that are understood by everyone involved; (iii) optimise patients' goal related behaviour and rehabilitation outcomes; and (iv) facilitate the development of a cumulative evidence base focused on goal setting in the rehabilitation setting.

As a first step in development of a goal setting practice framework, and in recognition of the importance of sound theoretical underpinning in the development and evaluation of complex interventions (22), the purpose of this paper is to: (i) identify and discuss specific theories of behaviour change relevant to setting and achieving goals in the rehabilitation setting, (ii) identify 'candidate' theories that offer most potential to inform clinical practice.

Methods

The literature was searched to identify review or empirical papers that proposed specific theories or models of behaviour change relevant to goal setting practice in a

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3 clinical context. Because goal setting is an integral part of health related self
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5 management interventions (23) (chapter 2), and the promotion of patient's self
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7 management skills is seen as essential to rehabilitation practice (2,24), our search
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9 included both the rehabilitation and health related self management literature.
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12 Appendix 1. details search strategies used, data bases searched and the
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14 inclusion/exclusion criteria.
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21 The titles, abstracts and if necessary, the full text of retrieved papers were
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23 independently screened against the inclusion criteria by two reviewers (LS and SW).
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25 Where a discrepancy existed between reviewers, the full text paper was screened by a
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27 third reviewer (DD), followed by a discussion between the three reviewers until a
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29 clear consensus was reached. If necessary, the first author of the retrieved paper was
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31 contacted if it was still unclear if the paper met the inclusion criteria. To develop data
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33 extraction methods, two reviewers (LS and DD) independently extracted data on the
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35 first ten papers using four preliminary headings: key constructs, clinical application,
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37 target for intervention and empirical support. Data extracted from each paper was then
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39 compared and discussed by both reviewers. Following this, the heading 'target for
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41 intervention' was discarded as the information it contained duplicated that under the
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43 heading of 'clinical application'. The remainder of the data extraction (fourteen
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45 papers) was completed by one reviewer (LS) using the three agreed final headings.
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54 Results

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56 A total of 519 papers were retrieved from the search after removal of duplicates.
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58 Twenty four papers met the inclusion criteria (See Table 2 for summary of retrieved
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60 papers). The majority of papers that did not meet the inclusion criteria fell into one of

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the following categories: 1. theory discussed was not a specific theory of behaviour change, 2. the link between the theory and how it related to the process of setting or achieving goals was not clear, 3. the paper was not a review paper or empirical study, or 4. goal setting was not discussed in a clinical context. On review of title and abstract, a discrepancy existed between reviewers (LS and SW) in fifteen of the 519 retrieved papers (3.5%). Agreement was reached on thirteen of these papers based on a full text review. For the two remaining papers, a full text review was conducted by a third reviewer (DD) which resulted in both of the queried papers being included.

Of the twenty four papers that met the inclusion criteria; twenty two were empirical studies and one paper (part i and ii) was a discussion and synthesis of empirical evidence. Three of the empirical studies specifically focused their investigation on the efficacy of the theory being proposed (25-27), the remaining nineteen empirical studies investigated the effectiveness of a theory based goal setting or action planning intervention (n=8), or a theory based intervention that included goal setting or action planning as a core component (n=11). Seventeen papers were set in a health related self management context, and seven in a rehabilitation context.

A total of five specific theories of behaviour change relevant to goal setting practice were proposed: Social Cognitive Theory (specifically the self efficacy component of this theory); Goal Setting Theory; Health Action Process Approach; Pro-active Coping Theory and the Self Regulatory Model of Illness Behaviour. Data extracted from the retrieved papers are summarised in the following section; information is organised by theory, in order of those most frequently proposed.

SOCIAL COGNITIVE THEORY (Bandura)

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3 Self efficacy occupies a central role within social cognitive theory (28) and was a key
4
5 theoretical construct discussed in thirteen of the retrieved papers (25,29-40). For a
6
7 review of this theory, see Bandura (1997) (28).
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12 Self efficacy is about how confident an individual is in their ability to achieve a
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14 desired goal in the presence of perceived barriers or facilitators (28) (pg 3). Self-
15
16 efficacy beliefs operate together with a person's outcome expectancies i.e. what they
17
18 believe the outcome of performing a particular goal directed behaviour will be (41)(pg
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20 306). Bandura argues that, 'unless people believe they can achieve desired effects by
21
22 their actions, they will have little incentive to act' (28)(pg2). Self efficacy is theorised
23
24 to exert its influence on health outcomes by improving motivation to set and pursue
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26 goals (42) and to increase resilience in the face of set backs during goal pursuit (26).
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34 Social cognitive theory is the theoretical framework used by several chronic disease
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36 self management programs which were the focus of six papers (32-35,38,39).
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39 Chronic disease self management programmes are a group intervention for people
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41 who have a chronic condition (31,42). Goal setting and action planning are key
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43 components of the intervention. Group participants formulate weekly action plans
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45 related to their personal self management goals. Self efficacy theory suggests that
46
47 successful completion of the action plan(s) should enhance self efficacy through
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49 mastery experience (success in a particular task or skill), with subsequent incremental
50
51 improvement in self management skills. Chronic disease self management
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53 programmes focus on education, performance related feedback, problem solving,
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60 modelling of self management behaviours and social persuasion (encouragement from
others) to further enhance self efficacy and improve health outcomes (31).

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6 In their synthesis of evidence of self efficacy enhancing interventions, Marks et al
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8 (2005) (31,42) cited four randomised controlled trials (32,34,35,38), a longitudinal
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10 follow study (33) and a before and after cohort study (39) examining the effectiveness
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12 chronic disease self management programmes in a variety of contexts. All of the
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14 studies reported significant improvements post intervention in self efficacy, health
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16 behaviours, health status and reduced health care utilisation when compared to
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18 controls. Reduced health care utilisation, reduced health distress and improved self
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20 efficacy were maintained two years post intervention in the longitudinal follow up
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22 (33). Whilst these results are very positive, all of these studies relied on volunteer
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24 subjects (arguably a highly motivated group), and self reports of outcomes status. In
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26 addition, the unique contribution goal setting and action planning made to improved
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28 outcomes was not examined separately in any of the studies.
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36 In addition to the chronic disease self management programmes , the review identified
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38 six further studies in which social cognitive theory informed the development of
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40 interventions to promote: adherence to joint protection techniques (29,30) and aquatic
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42 exercise (25) in people with arthritis, attainment of personal goals in women with
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44 multiple sclerosis (37), weight loss in obese people (36) and self management of
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46 arthritis (40). Goal setting was integral to all of the interventions. The interventions
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48 aiming to increase adherence resulted in significant improvements in use of joint
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50 protection techniques (29,30) and attendance at aquatic classes (25). Although
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52 positive increases in goal attainment were reported in women with multiple sclerosis
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54 (37) and improved weight loss in the obese group (36), methodological limitations of
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56 the former study and lack of adherence to the intervention in the latter do not allow
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firm conclusions to be drawn about the effectiveness of the intervention.

Improvements in self efficacy, pain and disability were reported in the arthritis self management intervention (40). Interestingly, this intervention was delivered by a multidisciplinary team, however it was a before and after study with no control group or separate analysis of the goal setting component of the intervention.

GOAL SETTING THEORY (Locke & Latham)

Goal setting theory was used to inform interventions in five of the retrieved papers (43-47), and was evaluated from a theoretical perspective on one paper (25). For a review of this theory see Locke and Latham (2002) (48).

According to goal setting theory, goal 'specificity' and 'difficulty' are the two primary goal attributes that will influence goal related performance. Goals should be proximal and specific as opposed to vague 'do your best' type goals, and should be difficult enough to challenge the person without taking them beyond the limits of their ability (48). Goals may be assigned rather than self set, as long as the purpose and rationale for the goal is given to foster goal commitment (48). The theory suggests that goals exert their influence by directing attention and effort, maximising persistence and fostering problem solving in relation to the set goal (48). Goal effects are moderated by a number of factors including goal commitment, self efficacy, task complexity and performance feedback (48).

The constructs of Goal Setting Theory were examined by Gyurcsik et al (2003) (25) in a longitudinal predictive study. This study tested the hypothesis that specific, difficult goals would be independent predictors of attendance at an aquatic exercise

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3 class in a group of people with arthritis. Results of the study partially supported the
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5 hypothesis. Goal specificity was a significant predictor of attendance at the class - as
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7 the setting of specific goals increased, (e.g. I will attend three times per week), so did
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9 the attendance at the class. In contrast to the study hypothesis, goal difficult was
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11 negatively correlated with attendance. The authors suggested that in this population,
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13 the effects of goal difficulty may be moderated by self efficacy; and that where self
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15 efficacy is low, setting easy goals should be encouraged to promote exercise
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17 adherence. Although the study hypothesis was not upheld, the findings were in fact
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19 congruent with Goal setting Theory which acknowledges the moderating effects of
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21 self efficacy on outcomes.
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29 Goal Setting Theory was used to inform a range of goal setting interventions which
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31 focused on setting specific goals. In a before and after computer based self
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33 management intervention, Estabrooks et al (2005) (43) examined the effect of setting
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35 specific goals in a diabetic population. Results demonstrated that setting specific goals
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37 led to an increase in the desired goal related behaviour e.g. increased physical activity.
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39 Further evidence to support use of setting specific goals was provided in a series of
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41 randomised controlled trials looking at the effects of a goal setting intervention on a
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43 brain damaged population (44-47). Gauggel and colleagues demonstrated that setting
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45 specific goals led to better performance than easy or 'do your best' goals, and that
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47 performance related feedback enhanced performance. Theses studies demonstrated
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49 the effectiveness of a goal setting intervention, which focused on setting specific
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51 goals and giving feedback, in a population that may normally be excluded on the basis
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53 of cognitive impairment. On a cautionary note however, the goals set in these studies
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55 were in relation to simple tasks such as a peg board activity, in a laboratory type
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environment. It is not clear if the same results could be achieved using personally relevant rehabilitation goals in real life contexts.

HEALTH ACTION PROCESS APPROACH (Schwarzer)

The Health Action Process Approach was proposed in three of the retrieved papers (26,27,49). For a review of this theory, see Schwarzer (50) (pg217-238).

The Health Action Process Approach suggests that behaviour change takes place in two distinct phases. The first phase is a motivational or decision making phase where goal intentions develop. Risk perception ('I am at risk of losing the ability to climb the stairs'), outcome expectancies ('If I practice climbing stairs every day, my legs will get stronger') and *action* self efficacy ('I'm confident I can do this if I use the stair rail for support'), are the key constructs relevant to this stage. The second volitional phase occurs when specific plans are put in place which act to bridge the gap between goal intentions and actions (26). Planning is crucial to this stage and can be broken down into two sub-constructs: action planning which specifies *where*, *when* and *how* to act; and coping planning which encourages the person to think about barriers that may get in the way of carrying out the action plan, and pro-actively think about strategies to overcome them (49). *Recovery* self efficacy is important in the volitional phase and will influence how the person recovers in the face of set backs (26).

The theoretical constructs of Health Action Process Approach were examined in two empirical papers set in a rehabilitation context (26,27). In a longitudinal study of cardiac rehabilitation patients (27), intention formation, action planning and coping

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4 planning were positively correlated with exercise during the rehabilitation period, and
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6 at two and four months after discharge. Intentions decreased and coping planning
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8 increased over time. These data are consistent with the Health Action Process
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10 Approach model which indicates that intentions are important at the stages of goal
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12 formation, and that coping planning becomes important at a later stage when people
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14 have had a chance to experience the barriers that arise during attempts to carry out
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16 action plans.
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22 Schwarzer et al (2008) (26) reported results of three longitudinal studies to examine
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24 the validity of the Health Action Process Approach model in relation to physical
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26 exercise adherence in rehabilitation settings. Action planning and recovery self
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28 efficacy were specified as proximal predictors of adherence to physical exercise in
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30 rehabilitation. This hypothesis was supported in all three studies. It was notable that
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32 risk perception was not significantly related to any of the variables under study. The
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34 authors conclude that clinicians should focus on improving patients' action self
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36 efficacy and outcome expectancies in relation to rehabilitation goals, and planning
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38 and recovery self efficacy to help patients translate their goals into action, and to
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40 maintain goal related behaviour change.
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50 A planning intervention designed to promote exercise during cardiac rehabilitation
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52 was examined in a longitudinal randomised controlled trial (49). Those patients who
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54 received the action planning and coping planning intervention reported significantly
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56 higher levels of exercise following discharge from rehabilitation compared to patients
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58 who received either action planning alone or routine care. Coping planning was
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60 especially important in the later stages of rehabilitation, when the patient was at home

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3 and had experience of the barriers challenging goal achievement. Unfortunately, no
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5 health outcomes were measured in this study, so it is not known whether
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7 improvements in exercise levels translated into changes in health status. However, it
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9 demonstrates the effectiveness of a action planning and coping planning in relation to
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11 achieving the goal of promoting exercise in a cardiac rehabilitation population.
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18 PRO-ACTIVE COPING THEORY (Aspinwall & Taylor)

19 Pro-active coping theory was proposed in two of the retrieved papers (51,52). For a
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21 review of this theory, see Aspinwall & Taylor (1997) (53).
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28 In the same vein as Health Action Process Approach model, proactive coping theory
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30 argues that people can anticipate and plan responses to threats likely to hinder goal
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32 achievement. In two similar studies, Schreurs et al (2003) (51) and Thoolen et al
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34 (2008) (52) tested a group based intervention designed to enhance of self-care
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36 behaviours in patients with asthma, heart failure and/or diabetes. Sessions included:
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38 goal setting, barrier identification, action planning, feedback and the use of
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40 homework. In both studies, participants highly valued the process of setting goals and
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42 pro-active coping planning and were very positive regarding the value of peer support
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44 and learning from others within the group. Significant improvements in pro-active
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46 coping, goal attainment and self efficacy were evident in the intervention group on
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48 completion of the course; however health related outcomes were not measured.
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56 There are clear similarities between the coping planning construct within the Health
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58 Action Process Approach and Pro-active Coping Theory; additionally, the pro-active
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60 coping interventions did not differ significantly from the self efficacy based chronic

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disease self management interventions. Therefore, on the basis of these papers, interventions based on proactive coping theory may not provide added value over interventions based on Social Cognitive Theory or the Health Action Process Approach. However, these papers did highlight important aspects of process and content evaluation of an intervention that included goal setting and action planning as a core component. This is crucial when examining the feasibility of complex interventions and preparing the intervention for trial evaluation.

SELF REGULATORY MODEL OF ILLNESS BEHAVIOUR (Leventhal)

This Self Regulatory Model of Illness Behaviour was used to inform an intervention in one of the retrieved papers (54). For a review of the model, see Myers (1998) (55).

The Self Regulatory Model of Illness Behaviour (also referred to as the Common Sense Model of Self Regulation) has three main constructs: (i) illness representations and emotional reactions, (ii) coping response (action planning), and (iii) appraisal. Illness representations reflect the person's beliefs about what the problem is, how serious it is, what caused it, how confident the person is the illness can be controlled, how long it is likely to last and how it might be cured (54). Illness representations, in combination with the person's emotional response to the health threat will influence coping responses and action plans, and their appraisal of outcomes. This model is interactive, with all three stages potentially influencing each other.

Theunissen et al (2003) conducted a randomised controlled trial of two interventions designed to influence patient illness representations and action plans with a view to achieving the goal of increased adherence to hypertensive medication (54). One

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group of patients focused on discussing and influencing illness representations that may hinder adherence to medication, whilst the second group focused on creating action plans to foster adherence. The control condition was a 'care as usual' consultation. Results indicated that the goal of increasing adherence levels was not determined by any of the interventions, but by pre-study adherence levels.

Discussion

Our review of the literature identified five theories of behaviour change relevant to setting and achieving goals in the rehabilitation setting: Social Cognitive Theory (specifically the self efficacy component of this theory); Goal Setting Theory; Health Action Process Approach; Pro-active Coping Theory and the Self Regulatory Model of Illness Behaviour. The question is, which of these (if any) could usefully inform clinical practice, and the development of a goal setting practice framework?

All of the proposed theories included key constructs that were clinically relevant. Clinicians will recognise that confidence or self efficacy, making plans, receiving feedback and trying to keep goals specific are all likely to impact on how patients engage in the goal setting process; however, they are unlikely to have been considered or applied in a structured or standard way during goal setting practice across different settings. The interventions described in the summarised papers demonstrate how these theories can be operationalised in practical ways in rehabilitation and health related self management contexts; however, it is significant that only one of the interventions identified in our review was implemented by a standard multi-disciplinary team and incorporated within their routine rehabilitation practice (40). This is an important consideration as our vision of a goal setting practice framework is that it would be

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used by a range of clinicians, within existing rehabilitation teams, for a mixed group of patients receiving rehabilitation services. This underlines the importance of developing a practice framework in collaboration with rehabilitation practitioners, and assessing its feasibility and acceptability in real life settings to optimise implementation.

It was interesting to note that a range of strategies and materials were used to support the interventions such as patient work books, telephone follow up or specialised computer programmes. There were training implications for delivery of all of the interventions, and often a manual and ongoing supervision was used to augment the training. These are important factors to consider when thinking about how implementation of the framework could be standardised to an optimum level in the clinical setting.

Interventions underpinned by Social Cognitive Theory (specifically, the self efficacy component of this theory) have been evaluated extensively at the level of randomised control trial, and have resulted in improved health care outcomes for a range of people with chronic conditions; however, these interventions tend to be multi-faceted, and the unique contribution goal setting and action planning has on outcomes has not been examined.

Goal setting interventions based on Goal Setting Theory have also been tested within randomised controlled trials, with positive results underlining the importance of setting specific goals and providing feedback. The goal setting interventions tested were somewhat simplistic when compared to the complexity of goal setting in routine

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clinical practice; however, the principal that setting specific goals and providing feedback is likely to enhance performance has important clinical implications.

The theoretical constructs of the Health Action Process Approach were tested and supported in two well conducted studies. An intervention based on this approach, which included action planning and/or coping planning, led to significant improvements in health behaviours when tested in a randomised controlled trial. There is evidence therefore to support the value of action planning and coping planning in relation to bridging the goal intention - behaviour gap.

Interventions based on Pro-active Coping Theory were supported by empirical evidence, however, these interventions did not appear to differ significantly or have any added value over interventions based on Social Cognitive Theory or the Health Action Process Approach.

Finally, the intervention based on The Self Regulatory Model of Illness Behaviour did not have favourable results on goal outcomes; however, this model does acknowledge the importance of emotions and illness representations in relation to behaviour change, an important consideration in the clinical setting.

So, on the basis of key constructs, clinical utility and empirical evidence – the self efficacy component of Social Cognitive Theory, Goal Setting Theory and the Health Action Process Approach are the strongest candidates to inform clinical practice and the next stage of development of a goal setting practice framework. It has been suggested that it is appropriate to consider integrating models and theories across

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3 common constructs (56), so a practical way forward could be to consider
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5 commonalities between candidate theories. This idea has been employed in the
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7 development of frameworks to guide interventions such as enhancing the
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9 implementation of evidence based practice by health care professionals (57) and
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11 improving health behaviours of people who are interested in making positive lifestyle
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13 changes (58).
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20 This review of the key constructs within each candidate theory revealed clear
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22 overlapping constructs, namely: *self efficacy* (Social Cognitive Theory, Health Action
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24 Process Approach, Goal Setting Theory); *outcome expectancies* (Health Action
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26 Process Approach, Social Cognitive Theory); goal *attributes* (Goal Setting Theory,
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28 Social Cognitive Theory); *planning* (Health Action Process Approach), and goal
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30 related *appraisal* and *feedback* (Goal Setting Theory, Social Cognition Theory).
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36 The Health Action Process Approach makes a useful distinction between the
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38 motivational phase of behaviour change, where the intention to act (or achieve a goal)
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40 develops, and the volitional phase in which the details of action are planned and the
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42 goal is pursued. Key constructs of each of the theories informs one or both of these
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44 phases in a practically useful way (see figure 1). Action self efficacy and outcome
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46 expectancies, are likely to be influential as patients do, or don't, develop goal
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48 intentions; as such, consideration of these constructs may help clinicians when
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50 negotiating rehabilitation goals and dealing with dilemmas such as goal setting with
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52 patients who are having difficulty identifying goals or who appear to lack motivation.
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54 Consideration of goal attributes can inform the clinician about how goals should be
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56 framed to optimise their effectiveness. Finally, action planning, coping planning,
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3 enhancing recovery self efficacy and providing performance related feedback should
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5 act to bridge the intention – behaviour gap by activating and sustaining goal directed
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7 behaviour. This could help address dilemmas such as translating general goals into
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9 specific goals and action plans, collaboratively deciding what constitutes successful
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11 goal achievement and increasing adherence to goal related behaviour. Ultimately, it is
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13 hoped that optimising goal related behaviour would have a positive impact on
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15 rehabilitation outcomes.
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22 The common constructs of the candidate theories of behaviour change identified from
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24 our review have a clear application to setting and achieving goal s in clinical practice;
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26 however, their limitations should be acknowledged. Theories of behaviour change
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28 construct social factors in terms of peoples’ beliefs, rather than influencing recovery
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30 and rehabilitation in their own right (59) (pg399). In clinical practice, goal setting
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32 should be embedded within in real life contexts (60). Contextual factors such as social
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34 support, economic resources, availability of equipment, physical aspects of the home
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36 environment and clinical priorities can act as barriers or facilitators to goal attainment.
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38 It is important that these are identified, and factored into the goal settings process at
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40 every level so that goals are meaningful, barriers are minimised and resources utilised
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42 to their full potential.
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50 51 Strengths and limitations of the review

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53 The need to develop a theoretical underpinning to goal setting interventions in the
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55 rehabilitation setting has been a recurring theme in the literature; we are attempting to
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57 meet this challenge head on. To date, we are not aware of any other review of this
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59 nature, which has attempted to identify theories of behaviour change relevant to the
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process of setting and achieving rehabilitation goals. However, there are limitations of this review that should be acknowledged.

Our search strategy was very specific (the three domains of theory, goal setting and clinical context had to be dominant themes within each paper to meet the inclusion criteria), and our choice of search terms not exhaustive. We did increase the sensitivity of the Cochrane data base search by extending the 'theory' search strand into the full text of the paper, rather than just the title or abstract, however, there will be empirical papers excluded from this review that discuss goal setting interventions in a clinical setting but do not make explicit links to a specific theory of behaviour change. By focusing on a theoretical perspective, we hope to develop a practice framework that can be understood in terms of what its core components are, and how and why they work. The reasons for this are two fold. Firstly, it can then be used by clinicians across different practice settings to inform goal setting interventions in a standard way with individual patients, rather than offering a prescriptive, rigid intervention. Secondly, it creates an opportunity for empirical evaluation of the effectiveness of the framework.

A further limitation to our review is that in the papers which examined the effectiveness of an intervention, although all interventions were theoretically underpinned, the theoretical 'fit' between the theory and intervention described was variable. The decision as to whether the paper met the inclusion criteria was therefore open to a degree of subjectivity. Additionally, not all of the included papers examined the unique contribution goal setting or action planning made to outcomes, most notably in the chronic disease self management interventions. It is difficult then

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to be clear about the stand alone effect of setting goals and/or creating action plans on outcomes, or to think in a linear way about the connection between theory and goal setting practice and clinical outcomes. In spite of these limitations, we believe this work creates an important foundation for the development of a goal setting practice framework.

Conclusion

This review has identified five theories of behaviour change relevant to the process of setting and achieving goals in the rehabilitation setting. It has been proposed that three of these theories: Social Cognitive Theory, Goal Setting Theory and The Health Action Process Approach, offer most potential to inform clinical practice on the basis of their clinical utility and empirical support. Overlapping constructs within the theories have been identified: self efficacy; outcome expectancies; goal attributes; action planning; coping planning and goal related appraisal and feedback. These constructs can be used and applied in clinical practice through the development and evaluation of a goal setting practice framework. The importance of integrating relevant social and environmental factors into the framework has been emphasised.

Theories of behaviour change relevant to goal setting practice

Clinical messages

- Social Cognitive Theory, Goal Setting Theory and the Health Action Process Approach are theories of behaviour change that can help clinicians understand and influence goal related behaviour
- These theories contain overlapping constructs that can inform goal setting practice in the rehabilitation setting.

For Peer Review

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Table 1. Summary of included papers

Paper	Theory	Study design	Clinical context	Intervention
1. Dubbert & Wilson (1984) (36)	Social Cognitive Theory	Randomised Trial	Self management of obesity	Goal setting
2. Hammond, Lincoln & Sutcliffe (1999) (29)	Social Cognitive Theory	Cross over trial	Self management of arthritis	Goal setting + other*
3. Alderson et al (1999) (40)	Social Cognitive Theory	Before and after pilot evaluation	Self management of arthritis	Goal setting + other*
4. Lorig et al (1999) (32)	Social Cognitive Theory	RCT	Self management of chronic conditions	Goal setting and action planning + other*
5. Barlow, Turner & Wright (2000) (38)	Social Cognitive Theory	RCT	Self management of arthritis	Goal setting and action planning + other*
6. Hammond & Freeman (2001) (30)	Social Cognitive Theory	RCT	Self management of arthritis	Goal setting + other*
7. Lorig et al (2001) (39)	Social Cognitive Theory	Before and after cohort study	Self management of chronic conditions	Goal setting and action planning + other*
8. Lorig et al (2001) (33)	Social Cognitive Theory	Longitudinal follow up to RCT	Self management of chronic conditions	Goal setting and action planning + other*
9. Fu et al (2003) (35)	Social Cognitive Theory	RCT	Self management of chronic conditions	Goal setting and action planning + other*
10. Lorig, Ritter & Gonzalez (2003) (34)	Social Cognitive Theory	RCT	Self management of chronic conditions	Goal setting and action planning + other*
11. Stuifbergen et al (2003) (37)	Social Cognitive Theory	RCT	Self management of multiple sclerosis	Goal setting

Theories of behaviour change relevant to goal setting practice

Paper	Theory	Study design	Clinical context	Intervention
12. Gyurcsik, Estabrooks & Frahm-Templar (2003) (25)	Social Cognitive Theory / Goal Setting theory	Longitudinal predictive study	Self management of arthritis	Not an intervention study
13. Marks, Allegranti & Lorig (2005a) (2005b) (31,42)	Social Cognitive Theory	Review and synthesis of evidence	Self management of chronic conditions	Not an intervention study
14. Gauggel, Leinberger & Richardt (2001) (46)	Goal setting theory	RCT	Brain injury rehabilitation	Goal setting
15. Gauggel & Fischer (2001) (47)	Goal setting theory	RCT	Brain injury rehabilitation	Goal setting
16. Gauggel, Hoop & Werner (2002) (44)	Goal setting theory	RCT	Brain injury rehabilitation	Goal setting
17. Gauggel & Billino (2002) (45)	Goal setting theory	RCT	Brain injury rehabilitation	Goal setting
18. Estabrooks et al (2005) (43)	Goal setting theory	RCT (secondary analysis)	Self management of diabetes	Goal setting and action planning
19. Sniehotta et al (2005) (27)	Health Action Process Approach	Longitudinal predictive study	Cardiac rehabilitation	Not an intervention study
20. Sniehotta, Scholz & Schwarzer (2006) (61)	Health Action Process Approach	Longitudinal RCT	Cardiac rehabilitation	Action planning and coping planning
21. Schwarzer et al (2008) (26)	Health Action Process Approach	Longitudinal predictive study	Cardiac rehabilitation	Not an intervention study
22. Schreurs et al (2003) (51)	Pro-active Coping Theory	Before and after process evaluation	Self management of chronic conditions	Goal setting + other*

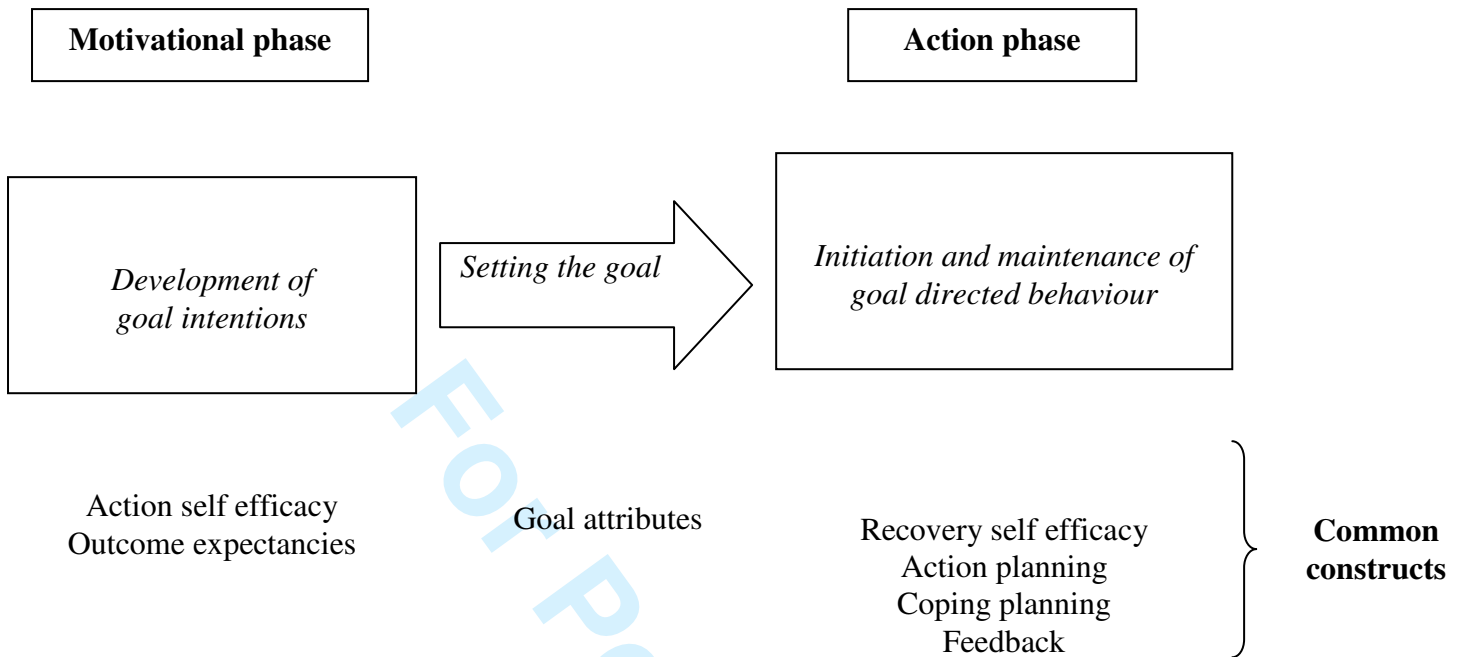
Theories of behaviour change relevant to goal setting practice

Paper	Theory	Study design	Clinical context	Intervention
23. Thoolen et al (2008) (52)	Pro-active Coping Theory	RCT	Self management of diabetes	Goal setting and action planning + other*
24. Theinussen et al (2003) (54)	Self-regulatory model of illness behaviour	Cluster RCT	Self management of hypertension	Action planning + other*

* Goal setting a core component of a multi-faceted intervention

Theories of behaviour change relevant to goal setting practice

Figure 1: Theoretical constructs applied to the motivational and action phases of goal behaviour



Theories of behaviour change relevant to goal setting practice

Appendix 1. Search strategy; data bases searched and inclusion/exclusion criteria*Search strategy:*

Rehabilitation strand

1. rehabilitation.mp.
2. *REHABILITATION/
3. goal setting.mp. or *Goal-Setting/
4. goal planning.mp.
5. action planning.mp.
6. objectives.mp. or *"Goals and Objectives"/
7. theoretical.mp. or *MODELS, THEORETICAL/
8. theory.mp. or *THEORY/
9. model.mp.
10. 3 or 4 or 5 or 6
11. 7 or 8 or 9
12. 2 and 10 and 11

Self management strand

1. goal setting.mp. or Goal-Setting/
2. goal planning.mp.
3. action plan\$.mp.
4. objectives.mp. or *"Goals and Objectives"/
5. theoretical.mp. or *MODELS, THEORETICAL/
6. theory.mp. or *THEORY/
7. model.mp.
8. self management.mp. or *Self Care/
9. chronic disease management.mp.
10. 1 or 2 or 3 or 4
11. 5 or 6 or 7
12. 8 or 9
13. 10 and 11 and 12

Data bases searched:

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CINAHL (1985-August 2008); EMBASE (1980- August 2008); AMED (1985-
August 2008); MEDLINE (1950- August 2008); ASSIA (1969- August 2008);
PsychINFO (1985- August 2008); Cochrane data base of controlled trials (August
2008). The reference lists of retrieved 'review' articles were checked for papers that
met the inclusion criteria.

Inclusion and exclusion criteria:

Inclusion: (i) review paper or empirical study, (ii) proposed a specific theory or model
of behaviour change relevant to the process of setting and/or achieving goals in a
clinical context (rehabilitation or health related self management setting) (iii)
published in a peer reviewed journal, and (iv) written in the English language.

Exclusion: papers were excluded if all four criteria were not met.