

A SYSTEMATIC REVIEW OF PSYCHOLOGICAL RETURN-TO-WORK INTERVENTIONS FOR PEOPLE WITH MENTAL HEALTH PROBLEMS AND/OR PHYSICAL INJURIES

MARC CORBIÈRE

Department of Rehabilitation, Université de Sherbrooke, Quebec

JIE SHEN

*Institute of Health Promotion Research, University of British Columbia,
Vancouver*

ABSTRACT

The objectives of the current systematic review are (a) to describe psychological return-to-work (RTW) interventions for people with mental health problems and/or physical injuries, and (b) to summarize the impact of these RTW interventions on work and health outcomes. Three conventional systematic review methods were used, and 14 studies were identified. The most popular psychological interventions focus on coping strategies, problem-solving strategies, and belief/attitude adjustments. These components are most often grouped together under the broad label, cognitive behavioural approach, an approach which has yielded significant results in terms of RTW and health improvement outcomes. Other key interventions include communication between stakeholders and the involvement of each framework level (i.e., individual, group, and organization) in the RTW process, supported by follow-up in the community.

With the growth of the global economy and increased demands from the information and knowledge industry, the workplace has inevitably succumbed to an atmosphere of anxiety and stress. Career or job stress has been identified as the single greatest health problem for working adults (Vierling, 1999). Employees struggle to survive in a constantly changing work environment fraught with continuous downsizing, mergers, acquisitions, and restructuring, while trying to maintain their mental and physical health. Mental health problems are one of the three leading causes of work disability, together with cardiovascular disease and musculoskeletal injuries (WHO, 2000). Mental health problems, particularly depression, are predicted to become the leading work disability by the year 2020 (WHO, 2005). As Goldner et al. (2004) noted in

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their review, only rarely are return-to-work (RTW) interventions offered to people with mental health problems, unlike RTW interventions for people with musculoskeletal injuries.

Researchers have identified a strong association between musculoskeletal injuries and psychopathology in injured employees (Dersh, Polatin, & Gatchel, 2002; Gatchel, 2004), more specifically with depression (Fishbain, Cutler, Rosomoff, & Rosomoff, 1997; Rush, Polatin, & Gatchel, 2000; Vines, Gupta, Whiteside, Dostal-Johnson, & Hummler-Davis, 2003; Williams, Jones, Shen, Robinson, & Kroenke, 2004). The incidence of psychological disturbance in chronic pain patients is 15 to 20% compared with 5% in the normal population (Haldorsen, Kronholm, Skouen, & Ursin, 1998). Even though depression and musculoskeletal complaints such as chronic pain have distinct determinants and symptoms, there are physiological similarities between these two disorders. Noniceptive and affective pathways anatomically coincide in both syndromes (Gatchel, 2005), which is why psychological RTW interventions for musculoskeletal injuries could also be useful for employees with mental health problems only.

Nearly 678,000 employed Canadians were found to have accumulated more than 39,000 excess person-years of short-term reduced activity associated with depression, while another 2 million had accumulated over 115,000 person-years of time absent from work for reasons associated with distress. The direct costs in terms of lost productivity (including both short- and long-term disabilities) related to the depression and distress of these workers were approximately \$8 billion (Stephens & Joubert, 2001). As for the direct costs of musculoskeletal injuries in Canada, they were estimated at \$7.5 billion (Coyte, Asche, Croxford, & Chan, 1998). These results indicate that the direct costs for musculoskeletal and psychological disorders represent a major economic burden for both employers and employees.

Interdisciplinary approaches are now recognized as the most effective treatment options for helping people with chronic pain return to work. Hildebrandt, Pflingsten, Saur, and Jansen (1997) noted that rather than excluding such patients from therapy, it was more important to integrate several components of psychological interventions such as cognitive behavioural therapy (CBT) into treatment programs in order to help people with musculoskeletal injuries return to work.

The first objective of this systematic review is to identify and describe the psychological RTW interventions that were offered to people with mental health problems and/or to people with physical injuries. The second objective is to summarize the significant work- and health-related outcomes obtained from these interventions.

METHOD

To maintain the quality of this review, three conventional systematic review methods were used: sensitive searching, systematic screening, and independent quality assessment (Marine & Serra, 2005; Murphy, 1996; van Wyk, Pillay, Swartz, & Zwarenstein, 2005; Wilson, Holman, & Hammock, 1996).

Search Strategy for Identification of Studies

A search was conducted for published studies related to psychological RTW interventions offered to adults experiencing absence from work due to mental health problems and/or work-related physical

injuries. It was decided a priori to search only for studies published in English- or French-language peer-reviewed journals between 1985 and 2005.

The studies reviewed were identified from the following six databases: Cochrane Central Register of Controlled Trials (CCRC), Cochrane Database of Systematic Reviews (CDSR), Ovid MEDLINE(R), EMBASE, CINAHL, and PsycInfo. To increase the search efficiency, three groups of databases were formed and searched separately: (a) CCRC and CDSR; (b) MEDLINE(R), EMBASE, and CINAHL; and (c) PsycInfo. The results were compiled in RefWorks (online bibliography management software).

A comprehensive set of search terms (copy available from authors) was developed. It included three generic terms (work, intervention, and RTW) and two terms for risk factors (mental health problems and physical injuries). The search term *work* was found in 13 relevant phrases (e.g., occupation); *intervention* was found in 25 relevant phrases (e.g., employee assistance programs); *RTW* in 10 relevant phrases (e.g., job re-entry); *mental health problems* in 14 relevant phrases (e.g., stress); and *physical injuries* in 23 relevant phrases (e.g., musculoskeletal diseases). Relevant subject headings (MeSH terms in Ovid and Thesaurus in PsycInfo) were included according to MEDLINE(R), EMBASE, CINAHL, and PsycInfo respectively. Systematic search syntax was developed based on the search terms (for more details see Marine & Serra, 2005; van Wyk et al., 2005), and search results were progressively combined using “and.” First, the search results for terms related to mental health problems and work were combined; then the results of the first combination were combined with physical injury terms, followed by intervention terms. Finally, RTW terms were combined with the previous search results. This search strategy had an accuracy rate of 1.3%, identifying 36 articles from the 2,827 articles yielded by the preliminary screening. Of these 36 articles, only 14 were included in this review. Inclusion criteria for the studies are described in the next section.

Screening: Study Inclusion/Exclusion Criteria for this Review

Studies involving RTW interventions aimed at improving the ability of employees on sick leave, with or without work-related physical injuries, to cope with or manage mental health problems were included. In this review, *sick leave* was defined as an absence from work because of illness due to work-related causes. The titles and abstracts of the electronic search results were screened and 36 studies were retrieved. A consensus decision between both authors was made, based on the inclusion criteria set out for the studies:

1. The interventions were offered to employees experiencing absence due to work-related causes.
2. The interventions were RTW oriented.
3. They had psychological components focusing on mental health problems.
4. They could be implemented either in the context of primary care or in the workplace.
5. The intervention participants were (a) 100% absent from work and 100% employed (including those who had a job available but not guaranteed) prior to and during the intervention, or (b) 100% absent from work and a mix of both employed and unemployed prior to and during the intervention.

The study exclusion criteria were (a) interventions that were designed as a transitional employment service or supported employment program, (b) interventions that included job-seeking components, and (c) interventions not aimed at RTW.

The drop rate of unqualified studies was considerably high in this review. Three reasons were identified. First, initial employment and absent-from-work status (i.e., sick leave) prior to the intervention was unclear. Many studies did not specify the number of participants who were employed but on sick leave, unemployed, or unemployed with a disability pension; moreover, many did not specify the duration of the sick leave prior to the intervention (Bendix, Bendix, Hastrup, & Busch, 1998; Bendix, Bendix, Labriola, Hastrup, & Ebbelohj, 2000; Watson, Booker, Moores, & Main, 2004). Second, RTW was not identified as a clear goal of the intervention; various multidisciplinary interventions sought to enhance coping skills and reduce distress and disability, but without the clear goal of returning people to work (Watson et al., 2004; The Pain Society of Great Britain and Ireland, 1997). Third, transitional employment services or supported employment programs were excluded because these programs tend to focus on participants with extensive long-term unemployment histories, who, more often than not, are no longer connected with a work setting.

Quality Assessment

The principles of avoiding bias and maximizing accountability when conducting a systematic review were maintained. The identified studies therefore underwent quality assessment, with two reviewers working independently and then meeting to discuss their findings. Different tools developed or established by systematic reviews in similar disciplines were used (Marine & Serra, 2005; Murphy, 1996; Pelletier, 1991; van Wyk et al., 2005; Wilson et al., 1996).

One reviewer (J.S.) independently extracted the following information (adapted from Murphy, 1996; Pelletier, 1991; Wilson et al., 1996) from the eligible studies (see Table 1): (a) author(s) and publication year, (b) purpose of the study, (c) research design rating, (d) sample size and country where the study was conducted, (e) sample description (inclusion criteria, general information), (f) components of the RTW intervention, (g) comparison group(s), (h) procedures (data collection), (i) outcome measures (work-related and health-related or other), (j) framework, and (k) significant findings (work-related and health-related). The other reviewer (M.C.) revisited the extraction summary and discussed details with the first reviewer until agreement was reached.

The research design rating was adapted from a series review of workplace health promotion (e.g., Murphy 1996; Wilson et al., 1996). We believe that this five-star rating system best represents the quality of our study's methodology in an objective way. It has five components:

1. ***** Evidence obtained from a properly conducted study with a randomized control group.
2. ***** Evidence obtained from a properly conducted study with control group but without randomization.
3. *** Evidence obtained without a control group or randomization but with an evaluation.
4. ** Evidence obtained without intervention but that might include long-term or dramatic results from the general dissemination of information or a medical agent in a population.
5. * Evidence that is descriptive, anecdotal, or authoritative.

Wilson et al. (1996) also introduced a very comprehensive model of workplace health promotion. In the current review, the three-level framework—individual, group/community, and organization—was used to evaluate the eligible studies from a macro perspective. The individual level concerns the employee's mental and physical health. The group/community level includes the employee's coworkers, supervisors, family, and non-work social network. The organizational level focuses on the company's formal and informal policies, rules, standards, and workplace accommodations. Wilson's model increases the social network surrounding the individual and acknowledges the importance of workplace relationships and family members, as well as their role in the individual's health.

RESULTS

Among the 14 studies included in this review, two were classified as focusing on work-related mental health problems only—particularly as adjustment disorders¹—and 12 were classified as focusing on work-related physical injuries, mostly musculoskeletal injuries. Table 1 presents a descriptive summary of all studies reviewed. The studies were divided into two categories according to the type of risk factors involved (i.e., mental health problems only, or physical injuries associated with mental health problems), and were then arranged by year of publication, and alphabetically within each publication year. Half of the studies involved working populations in Europe: three studies were conducted in the Netherlands, two in Sweden, one in Germany, and one in Norway. The studies conducted in other countries included one in Israel, three in Canada, and three in the United States. There were two major (non-exclusive) goals pursued by these 14 studies: (a) to evaluate the effectiveness of RTW interventions (11 out of 14); and (b) to identify the significant predictors of work outcomes (4 out of 14).

The background information on the participants was not available for any of the variables included in Table 2. In most of the studies, gender was well-distributed among participants, but certain samples were exclusively female or male. In terms of initial employment status, three-quarters of all participants were employed prior to the intervention, and more than half of the studies had participants on sick leave for fewer than 12 months. In half of the studies, occupational classification (adapted from Nieuwenhuijsen et al., 2003; de Zwart, Broersen, van der Beek, Frings-Dresen, & van Dijk, 1997) and educational level were well represented.

Nearly two-thirds of the studies presented cognitive behavioural therapy as the main intervention, while nearly one-third included other types of psychosocial interventions (e.g., communication skills). The most popular psychological interventions focused on coping strategies, problem-solving strategies, and belief/attitude adjustments (see Table 3).

A summary of the methodological aspects of the RTW interventions is presented in Table 4. More than half of the studies did not use a comparison group; among these, two-thirds obtained a three-star rating. Only 4 out of 14 studies included a randomized control group. All the studies focused on the individual level and almost half of them considered two levels of the framework, usually the individual and the organization. Only three studies considered all three levels. All studies were either prospective or longitudinal in design.

Table 1
Findings from Studies of RTW Interventions

1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor I: mental health problems					
Nieuwenhuijsen, Verbeek, Siemerink, & Tummers-Nijssen (2003).	To assess the quality of occupational rehabilitation for patients with adjustment disorders and to determine whether high quality of care is related to a shorter period of sickness absence.	**	100 patients (The Netherlands) Treatment group = 100	<i>Inclusion criteria:</i> (1) First 100 patients on sick leave because of adjustment disorders; (2) first time visit to an occupational physician (OP) since the onset of the sickness absence; (3) visited their OP in the years 1999 and 2000; (4) 100% absent from work. <i>General information:</i> 100 patients/employees were treated by 35 different OPs.	<i>Time frame of the intervention:</i> n/a. <i>Components:</i> The guidelines provide instructions on 5 aspects of the occupational rehabilitation process: (1) assess psychological symptoms and impairments of occupational functioning; (2) distinguish an adjustment disorder from major psychiatric disorders (e.g., depressive or anxiety disorder); (3) evaluate the effectiveness of treatment conducted in the curative sector; (4) assess all impediments in the RTW process; and (5) carry out intervention aimed at either the employee (e.g., use cognitive-behavioural techniques) or the workplace (e.g., advice on a gradual RTW).
van der Klink, Blonk, Schene, & van Dijk (2003).	To compare a three-stage cognitive behavioural treatment based on the principles of time contingency and graded activity approach with "care as usual" for the guidance of employees on sickness leave because of an adjustment disorder.	***** cluster randomized trial	192 employees/ patients (The Netherlands) Treatment group = 109 Control group = 83	<i>Inclusion criteria:</i> (1) were on first sick leave for an adjustment disorder; (2) met the DSM-IV criteria for adjustment disorder. <i>General information:</i> Royal KPN with Postal and Telecom Services had approx. 100,000 employees. Employees on sick leave for 2 weeks were referred to their OP. In-company OPs volunteered for intervention and were randomized into 2 groups: intervention = 17 and control = 16. Patients entered the trial according to the treatment group their OP was assigned to.	<i>Time frame of the intervention:</i> In the first 6 weeks of sick leave, there are 4 to 5 doctor-patient consultations (>90 minutes); in the first 3 months, the company management was kept informed by OP at least 3 times. <i>Components:</i> OPs were trained in multiple cognitive-behavioural, prescriptive interventions for 3 days. 1st stage: to emphasize information (e.g., cause of the loss of control); 2nd stage: to develop inventory of stressors and problem-solving strategies; 3rd stage: to practice and extend the skills learned in the 2nd stage.

(table continues)

Table 1
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7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
n/a	The first 2 consultations for each file were recorded. A consultation was defined as a personal contact between the OP and patient, either by telephone or face-to-face. Information on the rehabilitation process was abstracted from the medical files using a registration form.	<i>Work-related:</i> Number of days until first RTW (i.e., partial RTW), number of days until complete recovery (i.e., working as many hours as before the onset of the sickness absence – full RTW). <i>Health-related or other:</i> 10 performance indicators (e.g., quality of the assessment of symptoms) and criteria for rehabilitation of employees with adjustment disorders.	Individual and organizational level	<i>Work-related:</i> After 1-year follow-up, 84% employees/patients partially returned to their jobs and 73% had completely recovered (full RTW). Deviant care on “interventions aimed at the organisation” and “continuity of care” was significantly related to a longer time until a first RTW (partial RTW). Deviant continuity of care was also significantly related to a longer time until complete recovery (full RTW). Subjects older than 50 years took longer to reach full RTW. <i>Health-related:</i> n/a.
<i>Care as usual:</i> Control group received empathic counselling from their OP with focus on stress, lifestyle advice, and discussion of work problems with the patient and company management. OPs for this group were aware of the 3-stage model, but most had not been trained in its use and did not use it to structure their guidance.	Data were collected at baseline, 3- and 12-month follow-up. <i>Baseline measures:</i> sociodemographic characteristics, quality of work life, and coping style (DWHQ & UCL).	<i>Work-related:</i> RTW rates (time to partial RTW, time to full RTW), sickness duration, recurrence rates (time to recurrence, incidence of recurrence), absenteeism. <i>Health-related or other:</i> 4DSQ, SCL-90, MS, and baseline measures.	Individual and organizational level	<i>Work-related:</i> At both cluster and patient level, at 3 months, intervention group had significantly higher RTW rates. At patient level, time to RTW, time to full RTW, and duration of sickness leave were significantly shorter for the intervention group. <i>Health-related:</i> n/a.

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Table 1
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1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor II: physical injuries, comorbidity with risk factor I					
Feuerstein, Callan-Harris, Hickey, Dyer, Armbruster, & Carosella (1993).	To evaluate the long-term vocational outcome of a multi- component rehabilitation program.	****	34 patients (USA) Treatment group = 19 Control group = 15	<i>Inclusion criteria:</i> All pa- tients were (1) work disabled for a minimum of 3 months, and (2) receiving workers' compensation in-demnity and medical benefits. <i>General information:</i> Consecutive patients with chronic work-related musculoskeletal disorders of the upper extremities were referred to a Centre for Occupational Rehabilitation. 68% of the treatment group and 60% of the usual care group reported that a job was available to return to at the time of referral.	<i>Time frame of the intervention:</i> Treatment occurred daily over 4- to 6-week period. <i>Components:</i> (1) warm-up period; (2) physical conditioning; (3) work conditioning/stimulation; (4) job- related pain and stress management; (5) ergonomic consultation; and (6) vocational counselling/placement (optional).
Dozois, Dobson, Wong, Hughes, & Long (1995).	To longitudinally investigate which admission and treatment change variables predicted RTW in a population of patients with work- related low back pain (LBP).	***	117 male clients (Canada) Treatment group = 117	<i>Inclusion criteria:</i> (1) patients with LBP. <i>General information:</i> 256 clients whose chief complaint was LBP were assessed for entry into the Work Hardening Program (WHP) at the Columbia WORC Rehabilitation Center. The results of the current study are based on a sample of 117 injured male workers who participated in this interdisciplinary rehabilitation program. Sample size was reduced to 77 during analysis.	<i>Time frame of the intervention:</i> Daily participation in the program lasting an average of 11 weeks. <i>Components:</i> WHP consisted of psychological intervention, education, work and exercise conditioning, physical therapy, and vocational counselling (optional).

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7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
<p><i>Usual care:</i> Patients in this group were managed by their primary care physician and, where available, a rehabilitation nurse affiliated with the workers' compensation carrier. Typical care for these cases in the community included (1) physical therapy modalities; (2) therapeutic exercise; (3) hand therapy; (4) chiropractic treatment; and (5) rehabilitation counselling and/or pain treatment.</p>	<p>Data were collected at pre-treatment and post-treatment (17- to 18-month follow-up).</p> <p><i>Pre-treatment measures:</i> Subject characteristics, RTW expectation (VAS), pain and fear of reinjury (VAS), psychological status (MCMI-II), perception of former work environment, and job availability.</p>	<p><i>Work-related:</i> RTW status, type of employment (full-time, part-time, self-employed).</p> <p><i>Health-related or other:</i> program length and cost.</p>	Individual level	<p><i>Work-related:</i> Significantly higher percentage of cases in the treatment group returned to work (73.7%) in contrast to the usual care control group (40%). Significantly higher percentage of cases from the treatment group returned to full-time employment (91% vs. 50%).</p> <p><i>Health-related:</i> n/a.</p>
n/a	<p>Data were collected prior to admission to and at discharge from the program, and at approx. 9 months via telephone survey.</p> <p><i>Predictor variables:</i> self-perceived disability (OI), psychological distress (SCL-90R – depression subscale and global severity index only), pain rating (NRS-101), functional status, Perceived Employability and Disability (PCQ), and Coping Strategies (CSQ).</p>	<p><i>Work-related:</i> RTW status (employed = paid position, unemployed)</p> <p><i>Health-related or other:</i> Predictor variables.</p>	Individual level	<p><i>Work-related:</i> Of the 117 male patients, 58% returned to work.</p> <p><i>Health-related:</i> The employed group had significantly less self-reported physical limitations, lower psychological distress (depression, severity of the symptomatology), and lower pain ratings. In contrast, the unemployed group had higher scores on the coping factors.</p>

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Table 1
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1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor II: physical injuries, comorbidity with risk factor I					
Hildebrandt, Pfingsten, Saur, & Jansen (1997).	To evaluate the effectiveness of multidisciplinary treatment of functional restoration in accordance with interrelated conditions present within the labour market and the national health care system for patient with chronic low back pain.	***	90 patients (Germany) Treatment group = 90	<i>Inclusion criteria:</i> (1) chronic back pain not a result of inflammation or cancer; (2) age 18-57 years; (3) no indication of surgical treatment; (4) at least 3 months time off work during the preceding year. <i>General information:</i> 90 patients were admitted to a program of functional restoration and behavioural support. 81% obtained full compensation (mean duration of time off work was 8.9 months). 9 cases were removed from the analyses due to various reasons. In total, 64 patients who were off work during the treatment were included in RTW analyses.	<i>Time frame of the intervention:</i> 8 weeks. <i>Components:</i> The program consisted of (1) a <i>pre-program</i> (education, stretching and callisthenic exercises) lasting 4 hours a day, 3 times a week, over a period of 3 weeks; and (2) an <i>intensive treatment period</i> (physical exercises, back school education, cognitive behavioural group therapy, relaxation training, occupational therapy, socioeconomic and vocational counselling) lasting 7 hours a day for 5 weeks on an outpatient basis. Physical exercises constituted the main part of the program. The aim of the cognitive behavioural group therapy (1.5 hours daily) was to structure pain-related concepts and experiences. Patients were taught a comprehensive view of pain, mind-body relationship, and coping strategies for pain and emotional distress.
Jensen, Dahlquist, Nygren, Royen, & Stenberg (1997).	To evaluate whether a Multimodal Cognitive- Behavioural Treatment (MMCBT) for chronic spinal pain specifically designed for women with a moderate degree of learned helplessness had an increased effect on well-being and RTW compared to a regular MMCBT regimen.	*****	63 female patients (Sweden) Treatment group = 29 Control group = 5 Only 54 were followed during the whole study.	<i>Inclusion criteria:</i> (1) female gender; (2) age between 20 and 55; (3) suffering from non- specific spinal pain without neurological signs; (4) sick- listed for a minimum of 1 month and a maximum of 12 months during the preceding year; (5) currently employed; (6) raised in the Swedish cultural environment; and (7) reach or exceed the RAI cut-off point (20 points). <i>General information:</i> From patient/sick list of National Health Insurance Authority (NHIA), 178 women met the criteria and 129 filled in the RAI and met the cut-off point. Only 63 participants remained due to the study being conducted on an inpatient basis. They were randomly assigned to two groups.	<i>Time frame of the intervention:</i> 5 weeks, 8 hours per day, inpatient group-based program. <i>Components:</i> Special MMCBT (experimental intervention): (1) added component of psychologist-led group sessions aiming to further elucidate coping behaviour, helplessness, and gender-specific behaviour; (2) 3 hours less per week of physical training. 10 psychologist-led group sessions of 2 hours each for 5 weeks: (a) sex roles/ communication/self-esteem/personal integrity/how to say "no"; (b) cognition/cognitive errors/learned helplessness cognitive restructuring; (c) problem solving/goal planning/goal setting with focus on the female sphere; and (d) concluding discussions with feedback, contract setting. The psychologist in the team had follow-up contacts with the subjects by phone and mail about once per month during 6 months post-treatment.

(table continues)

RETURN TO WORK AND MENTAL HEALTH PROBLEMS

Table 1
(continued)

7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
n/a	<p>Data were collected at baseline, on discharge from the program, and at 6- and 12-month follow-up.</p> <p><i>Initial evaluation:</i> a medical examination, a rating of the physical impairment, patients' belief regarding RTW post-treatment, a personal interview, a subjective description of worksite variables, VAS, PDI, FFbH, a depression scale, a scale of psychovegetative reports, and FEKB.</p>	<p><i>Work-related:</i> RTW status (back to work, not working). <i>Health-related or other:</i> Therapeutic measures in <i>initial evaluation</i>.</p>	Individual level	<p><i>Work-related:</i> 43 patients of 64 (67%) who were unable to work before treatment returned to the workplace. 4 parameters to determine the probability of RTW were identified with an accuracy rate of 86.2%: (1) the length of absence from work; (2) patients' own prognosis of a potential RTW; (3) application of pension; (4) patients who had worked as truck drivers. Back to work can best be predicted if standardized treatment reduces disability, reduces depression, and has been carried out without individual physiotherapy. <i>Health-related:</i> In the year after treatment, marked reductions in depressive symptoms, medication intake, medical visits, and physical treatments for back pain were noted.</p>
<p><i>Regular MMCBT:</i> exercise therapy, education, problem solving, goal setting, applied relaxation, and self-efficacy training. The focus was on exercise therapy (2/3 of the time) and education. Psychologist led a weekly 1-hour session (5 in total) which addressed only pain-related topics: (1) tension/relaxation/breathing; (2) stress/stress pattern/stress reduction; (3) cognition/cognitive errors/cognitive restructuring; (4) gait control theory/pain control; and (5) problem solving/goal planning/goal setting. Follow-up contacts by telephone were provided by a nurse every 6 weeks during 6 months after the intervention.</p>	<p>4 assessments were conducted at pre-treatment (1 week before treatment started), the week post-treatment, and at 6- and 18-month post-treatment.</p>	<p><i>Work-related:</i> Sick leave (≥ 4 days) from NHIA collected 1 year prior to the treatment and 18 months following participation in the program. <i>Health-related or other:</i> (1) Pain Intensity and Anxiety (VAS); (2) Depression (BDI); (3) Perceived Helplessness (Swedish version of RAI); (4) Coping strategies (Swedish version of CSQ); (5) Subjective Health Status (GSI); and (6) Disability (DRI).</p>	Individual level	<p><i>Work-related:</i> n/a. <i>Health-related:</i> The only significant difference in health between groups was found in self-reported disability (over time) and depression (at 6-month follow-up) favouring the experimental group. Pain-coping ability was significantly improved in the experimental group. Perceived helplessness was significantly different between groups at the 4th assessment favouring the experimental group.</p>

(table continues)

Table 1
(continued)

1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor II: physical injuries, comorbidity with risk factor I					
Haldorsen, Kronholm, Skouen, & Ursin (1998).	To evaluate the cost effectiveness of the MMCBT program for the social security system with respect to RTW.	*****	469 patients (Norway) Treatment group = 312 Control group = 157	<i>Inclusion criteria:</i> (1) more than 50% sick listing for International Classification of Primary Care (ICPC) diagnoses given by general practitioners indicating musculoskeletal pain; (2) sick-listed for 8 weeks; (3) employed. <i>General information:</i> 469 patients sick-listed were recruited through the National Insurance System. The individuals were allocated randomly to either treatment or control group. These two groups included 43 patients from the pilot group. At post-test, data were obtained from a total of 293 (94%) of the original treatment group and 94 (60%) in the control group.	<i>Time frame of the intervention:</i> MMCBT lasted for 4 weeks, with 6-hour sessions 5 days per week. <i>Components:</i> The program included physical treatment (e.g., group activities, individual training and therapy), cognitive behavioural modification (e.g., lifestyle management, and cognitive coping strategies), education, and workplace-based interventions. Individual aspects of the treatment were tailored according to the pre-test examination. Employers (e.g., company health service and/or work supervisor) were contacted for possible job modifications. Individual advice was provided at 2-, 6- and 10-months. There were telephone contacts, and risk patients were also given individual follow-ups at the clinics.
Marlin, Anchel, Gibson, & Goldberg, & Swinton (1998).	To evaluate the effectiveness of a comprehensive multidisciplinary intervention for patients with chronic fatigue syndrome (CFS).	****	71 patients (Canada) Treatment group = 51 Control group = 20	<i>Inclusion criteria:</i> (1) met the Fukuda et al. criteria for a diagnosis of CFS. <i>General information:</i> 71 patients were assessed at a multidisciplinary treatment centre. 51 subsequently underwent multidisciplinary intervention while the remaining 20 were assessed but not treated. All 71 patients were receiving disability benefit. The occupations of the patients included professional/managerial, sales, clerical/administrative, skilled labour, teaching, technical. Post-treatment data were available for all 51 treated patients. Follow-up data were subsequently obtained for 17 of the 51 treated patients and for 5 of the 20 untreated patients; thus, the results based on follow-up data are not presented here.	<i>Time frame of the intervention:</i> Average 6 months (2-12) for the individualized treatment program. The patient was typically seen 2-3 times per week in the home environment for 1-4 hours. <i>Components:</i> The program was individually tailored to patients, including (1) structured physical exercise and activation; (2) sleep management strategies; (3) careful activity management; (4) regulation of stimulant intake and reductions in use of symptomatic medications; (5) cognitive intervention dealing with patients' beliefs concerning the nature of their disorder; (6) participation of patients' family; and (7) efforts to establish specific vocational and avocational goals. A variety of stress management techniques were implemented. Third parties were encouraged to collaborate and employers were urged to provide employment opportunities and facilitate a graduated but time-targeted RTW. Treatment may progress to the use of a fitness facility and to the work environment. The intensity of therapeutic involvement was gradually decreased over time to establish more patient independence.

(table continues)

Table 1
(continued)

7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
<p><i>Usual treatment:</i> Patients in the control group were followed up by their general practitioners (GP), without any feedback or advice on therapy. These patients were subjected to ordinary treatments given by the GP, esp. physiotherapy.</p>	<p>Data were collected at pre-test (before randomization) and post-test (12 months after treatment).</p>	<p><i>Work-related:</i> RTW status from National Health Insurance Register (followed for 5 years).</p> <p><i>Health-related or other:</i> (1) A standardized physiotherapy examination; (2) medical and psychological test batteries.</p> <p>Questionnaires administered: comprehensive questionnaire (e.g., demographic variables, life quality, social situation); pain (pain drawing test, VAS); daily activities (Norwegian version of ADS); subjective health (UHI); subjective work ability (GRWA); health locus of control (MHLC Form A); anxiety (STAI I-II); psychological distress (Norwegian version of HSCL); and personality (Norwegian version of EPI Form A).</p>	<p>Individual and organizational level</p>	<p><i>Work-related:</i> n/a.</p> <p><i>Health-related:</i> The treatment group was significantly more satisfied with their work situation at 12 months follow-up compared to the control group. Only the treatment group reported better health, social situation, and economy over time. The treatment group received significantly less treatment by a physiotherapist during the follow-up period. There was a significantly higher reduction in psychological distress in the treatment group and significantly less belief that they should be cured by others, in particular their physician. The treatment group showed a significantly better ergonomic performance and had better possibilities to perform in their work.</p>
<p>20 assessed patients without treatment.</p>	<p>Data were collected at pre-treatment, post-treatment (the end of the treatment), and 12–72 months follow-up.</p> <p><i>Pre-treatment assessment:</i> physical, psychological (MMPI, BDI, BAI, BHS), cognitive and emotional functioning and personality characteristics (WAIS-R, WMS-R, WRAT, PASAT), employment history, current employment status, and current insurance status.</p>	<p><i>Work-related:</i> RTW status: (1) RTW (full-time, part-time), (2) work equivalent (e.g., training, job searching), and (3) disabled (on benefits).</p> <p><i>Health-related or other:</i> n/a.</p>	<p>Individual, community, and organizational level</p>	<p><i>Work-related:</i> After treatment, 31 (out of 51) of the treated patients were gainfully employed in some capacity at the end of their treatment program. Of these 31 patients, 26 were employed on a full-time basis; the remainder were working part-time, approximately 20 hours per week. A further 14 of the treated patients were functioning at a level where they were deemed capable of full-time employment but were either in the process of education retraining, job searching, or engaged in some other non-paid activity (work equivalent). The remaining 6 of the treated patients continued to be disabled with respect to regular gainful employment.</p> <p><i>Health-related:</i> n/a.</p>

(table continues)

Table 1
(continued)

1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor II: physical injuries, comorbidity with risk factor I					
Vendrig (1999).	To determine the pre-program (i.e., prognostic) factors and treatment-related improvements associated with RTW following multimodal treatment for chronic back pain.	***	143 patients (The Netherlands) Treatment group = 143	<i>Inclusion criteria:</i> (1) had chronic back pain for at least 3 months. <i>General information:</i> 147 consecutive patients referred to the Netherlands Back Advice Centre were invited to the study. 143 patients participated.	<i>Time frame of the intervention:</i> 4-week daily outpatient multimodal program. <i>Components:</i> (1) back school; (2) discussion of deep-rooted beliefs about symptoms and disabilities; (3) stress management training; (4) modification of maladaptive behaviour and emotions; and (5) physical training including squash and swimming. At pre-test, partners of the patients were invited to review the assessment (prior to treatment) results. The employers of the patients were contacted by the occupational therapist to arrange RTW of the patients.
Marhold, Linton, & Melin (2001).	To evaluate the effectiveness of a cognitive-behavioural RTW focused program in coping with pain and RTW for women with musculoskeletal pain and to compare the treatment effects on short- and long-term sick leave groups.	*****	72 female patients (Sweden) Treatment group = not mentioned Control group = not mentioned Long-term sick leave (>12 months) group = 36 Short-term sick leave (2-6 months) group = 36	<i>Inclusion criteria:</i> (1) women between 25 and 60 years old, (2) a diagnosis of musculoskeletal pain, (3) gainfully employed, and (4) on sick leave. <i>General information:</i> 72 participants were recruited on a register listing of persons on sick leave. The participants' work fields were diverse: nursing, cleaning, administration, restaurant work, and shop assistance. Patients on part-time sick leave were also included in the study, and the number of days on sick leave was adjusted according to their work percentage to form full sick leave days.	<i>Time frame of the intervention:</i> 12 weekly sessions and two booster sessions (1- and 3-months after treatment). <i>Components:</i> 1st part, 6 sessions – (1) education, (2) goal setting, (3) graded activity training, (4) pacing of activities, (5) relaxation cognitive techniques, (6) social skills training, (7) stress management, (8) problem solving; 2nd part, 6 sessions – (9) planning the RTW, (10) generalize coping skills to occupational risk factors, (11) handle difficulties at the beginning of the work return, (12) individual maintenance programs. Participants also received phone calls from the psychologist every 3rd session, after the program and in between the booster sessions. Rehabilitation administrators at the National Insurance Authority were involved in the 2nd part of the intervention. The treatment group also had free access to treatment-as-usual. 59% had visited a physician, 53% a physiotherapist, 3% a nurse, and 3% an occupational therapist before the post-treatment assessment.

(table continues)

Table 1
(continued)

7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
n/a	<p>Data were collected at pre-test, 3-, 6-, 9- and 12-month follow-up.</p> <p><i>Pre-test:</i> full orthopaedic-neurological examination.</p>	<p><i>Work-related:</i> RTW status: (1) complete (100%) RTW = fully return to regular work, and (2) incomplete (<100%) RTW.</p> <p><i>Health-related or other:</i> (1) physical functioning (lumbar functioning and cardiovascular fitness); (2) experience of pain (VAS, pain drawing); (3) functional disability (Dutch version of QBPDS); and (4) psychological distress (MMPI-2).</p>	Individual, community, and organizational level	<p><i>Work-related:</i> One year after the treatment, with 6 missing data, among 137 patients, 120 patients achieved a complete RTW (87.6%). The results showed 4 variables to be significantly predictive of complete RTW: time off work, a history of spinal surgery, a clinically elevated score on the MMPI-2 scale, Lassitude-Malaise and Hypochondriasis.</p> <p><i>Health-related:</i> n/a.</p>
<p><i>Treatment as usual:</i> The control group received treatment-as-usual without cognitive-behavioural interventions. Of the control patients, 60% had visited a physician, 50% a physiotherapist, 15% a nurse, 10% an occupational therapist, and 6% a psychologist before the post-treatment assessment.</p>	<p>Self-report inventories were administered at pre- and post-treatment, and 6-month follow-up.</p> <p>Sick leave data were collected in the 2 months before treatment, the 2 months after treatment, the 2 months between the 2nd and 4th month after treatment, and the 2 months between the 4th and 6th month after treatment.</p> <p><i>Self-report inventories:</i> MPI, CSQ, BDI, PAIRS, DRI.</p>	<p><i>Work-related:</i> The sick leave data consisted of the number of days on sick leave over periods of 2 months, which meant a maximum of 60 days per period. Objective data on sick leave were obtained from the National Insurance Authority.</p> <p><i>Health-related or other:</i> Self-report inventories. For the MPI the recommended scoring procedure from the Swedish standardization was used (Bergström et al., 1998).</p>	Individual and community level	<p><i>Work-related:</i> Within the treatment group: Number of days on sick leave significantly decreased for patients on short-term sick leave from pre- to post-treatment, from pre-treatment to the 4-month follow-up, and from pre-treatment to the 6-month follow-up.</p> <p><i>Within the control group:</i> The number of days on sick leave significantly decreased from pre-treatment to the 4-month follow-up.</p> <p><i>Between groups:</i> The treatment group on short-term sick leave had a significantly lower number of days on sick leave compared to their controls from pre-treatment to post-treatment and from pre-treatment to the follow-ups.</p> <p><i>Health-related:</i> Compared to the control group, the treatment group on short-term sick leave had a significant improvement in pain, control of pain, affective distress, general activity, experience of pain and impairment, and experience of disability from pre-treatment to post-treatment, and/or from pre-treatment to follow-up. The treatment group of patients on long-term sick leave decreased their experience of pain and impairment from pre-treatment to post-treatment. However, the control group significantly reduced their pain intensity from pre-treatment to post-treatment.</p>

(table continues)

Table 1
(continued)

1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor II: physical injuries, comorbidity with risk factor I					
Guleserian (2002).	A case study using case manager to help an individual understand how beliefs and attitude affect emotions and behaviour.	*	1 (anecdotal) (USA) Treatment group = 1	<i>Inclusion criteria:</i> n/a. <i>General information:</i> Steve was injured at work and was diagnosed with acute back strain. After two years' treatment with an orthopaedic surgeon, he was diagnosed with multiple degenerative disc disease. He had a fear of reinjury and became seriously deconditioned.	<i>Time frame of the intervention:</i> n/a. <i>Components:</i> Case manager: introduce new behaviour; cognitive awareness; implement informal cognitive behaviour work, and behaviour empowerment. Employer: created a modified position according to Steve's functional capacity evaluation, involving transition to a different store.
Nuttman- Schwartz & Ginsburg (2002).	To evaluate the effectiveness of a single-session group intervention program interweaving knowledge regarding the injury, the accompanying rights, emotional results of the injury, and improved communications with respect to earlier RTW of injured employees.	*	130 employees (Israel) Treatment group = 130	<i>Inclusion criteria:</i> (1) employees had minor injuries in the years 1997- 1998. <i>General information:</i> The intervention was conducted in a large plant of approximately 10,000 employees. Most of the employees were 40 to 60 years of age and worked in the production line or in construction. There were 6- 8% of the annual workforce injury claims. The 130 workplace-injured employees were about 15% of the workplace injuries in 1997-1998. All 130 employees had difficulties returning to their previous duties and did not seek an alternative position.	<i>Time frame of the intervention:</i> 4 hours single session. <i>Components:</i> Each intervention session contained 20-25 participants. In total, 8 single intervention sessions were offered to 130 employees. 2 <i>two-hour sessions</i> – (1) lecture on the nature of workplace injury and the review of worker rights; (2) in small group (10-12) work through emotional stress (e.g., stress debriefing, reframing the workplace injury, and reducing the fear and frustration evoked by encounters with the system), and outline a personal program for returning to work (e.g., personal narrative, problem solving and RTW). <i>Group leader</i> had an essential role in the success of the program by helping participants share their fears and becoming supportive of others in a similar position. At the end of the session, the participants received a brochure describing their rights, information on the social service system, and the address of their administrative coordinator. Workshops for <i>administration staff</i> were conducted at their request to obtain information, to understand what the injured employees experienced and to obtain a frame that will support and improve their functioning. <i>Continuous systematic evaluation</i> accompanied the intervention and included 3 parties: the corporation, the occupational social worker, and the injured employees.

(table continues)

Table 1
(continued)

7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
n/a	<p>Data were collected at 6 months follow-up.</p> <p><i>Initial assessment:</i> The case manager assessed (no detail provided) Steve's emotional status and determined how to approach him regarding RTW.</p>	<p><i>Work-related:</i> Return to the previous job.</p> <p><i>Health-related or other:</i> Cognitive behaviour measures (no detail provided).</p>	Individual and organizational level	<p><i>Work-related:</i> Steve returned to work. After 6 months, he completed his training and had been promoted.</p> <p><i>Health-related:</i> Steve went through a difficult transition period with improved endurance and positive attitude.</p>
n/a	Evaluation questionnaire was administered at the end of the treatment.	<p><i>Work-related:</i> RTW rate.</p> <p><i>Health-related or other:</i> Communication between 3 parties: the corporation, the occupational social worker, and the injured employees.</p>	Individual, group and organizational level	<p><i>Work-related:</i> n/a.</p> <p><i>Health-related:</i> n/a.</p>

(table continues)

Table 1
(continued)

1. Study (authors, year)	2. Purpose of the study	3. Research design rating	4. Sample size (country)	5. Sample description	6. Components of RTW intervention
Risk factor II: physical injuries, comorbidity with risk factor I					
Sullivan & Stanish (2003).	To describe the development, implementation, and preliminary outcome associated with mental health and RTW of the Pain-Disability Prevention (PDP) Program for claimants with pain-related disability.	***	104 claimants (Canada) Treatment group = 104	<i>Inclusion criteria:</i> (1) Claimants of Workers' Compensation Board of Nova Scotia; (2) off work for 6 weeks for back injury; (3) showed evidence of at least one "yellow flag" (e.g., emotional distress). <i>General information:</i> Claimants of Workers' Compensation Board of Nova Scotia who met the inclusion criteria were offered participation in the PDP program. 104 claimants participated and the mean time off work at the time of the first treatment session was 18.3 weeks (6-50 weeks). With respect to health-related measures, the sample size was reduced to 80.	<i>Time frame of the intervention:</i> a 10-week cognitive-behavioural intervention program. <i>Components:</i> (1) maintaining an activity log; (2) activity scheduling; (3) the walking program; (4) increasing activity involvement; (5) overcoming psychological obstacles to activity involvement (<i>2nd phase of program only</i>). Participants received PDP Client Workbook and PDP Information Video and were asked to review the video before the first session. Participants' family physicians also received a copy of video to familiarize the physicians with the program and to avoid the medical contraindications.
Vowles, Gross, & Sorrell (2004).	To investigate how demographic and treatment outcome variables (that have empirical or theoretical relations to RTW) interacted to influence post-treatment RTW rates in a sample of individuals with chronic pain following interdisciplinary treatment.	***	138 patients (USA) Treatment group = 138	<i>Inclusion criteria:</i> (1) had pain in excess of 90 days; (2) had an explicit goal of improving functioning and/or returning to work; (3) insurance approval. <i>General information:</i> Patients who met the inclusion criteria of the treatment for chronic pain and had completed the interdisciplinary treatment were included in the analyses = 138 (only 127 in post-treatment RTW analysis). All were receiving workers' compensation benefits at the onset of treatment. With regard to job status, 53% of the patients who were enrolled in the treatment program had a job available (not guaranteed) with their prior employer following treatment.	<i>Time frame of the intervention:</i> 4-6 weeks in length, 6 hours per day, 5 days per week. <i>Components:</i> Each day: 3 hours of psychoeducational groups and 3 hours of physical and occupational therapy. All patients had daily contact with the treatment team and were seen by a rehabilitation physician at least once per week.

(table continues)

Table 1
(continued)

7. Comparison groups(s)	8. Procedures (data collection)	9. Outcome measures	10. Framework	11. Significant findings
n/a	Assessments were completed at 1 st , 4 th and 10 th weeks.	<i>Work-related:</i> RTW status: (1) treatment success = RTW or readiness to return to work at termination of the treatment program, (2) treatment failure. <i>Health-related or other:</i> catastrophizing (PCS), fear of movement/reinjury (TSK), and depression (BDI-II).	Individual and community level	<i>Work-related:</i> 45% of the participants in the PDP program returned to their pre-injury employment by the end of the 10-week program. An additional 15% of individuals indicated that they had contacted or were ready to contact their employer to initiate RTW. Age was significantly related to RTW, where treatment successes were significantly younger than treatment failures. Three variables (catastrophizing, fear of movement/reinjury and depression) were significantly related to RTW. <i>Health-related:</i> Over time, there was a significant improvement in depression, movement/reinjury, and pain catastrophizing for 80 participants. Values of these 3 variables were significantly higher for treatment failures even at pre-treatment assessment.
n/a	Data were collected at baseline, and 6-month follow-up. <i>Baseline measures:</i> self-report psychosocial measures (BDI-II, MPQ-SF, PASS, PDI), and assessment of physical capability (FCE).	<i>Work-related:</i> RTW (incl., part-time or full-time RTW, job retraining, and education programs). <i>Health-related or other:</i> n/a.	Individual level	<i>Work-related:</i> Of 127 participants, 70.9% ($n = 90$) of the individuals reported having returned to work within 6 months of treatment completion; of these, 79 reported working full-time. Five factors were significantly correlated with 6-month post-treatment work status and 2 of these, depression and participant age, accounted for a significant amount of variance – approximately 28% of the variance in post-treatment work status. <i>Health-related:</i> n/a.

(table continues)

Table 1
(continued)

Note. n/a = not applicable or not available.

Research design rating

- ***** Evidence obtained from properly conducted study with a randomized control group.
 ***** Evidence obtained from properly conducted study with control group but without randomization.
 *** Evidence obtained without a control group or randomization but with an evaluation.
 ** Evidence obtained without intervention but that might include long-term or dramatic results from general dissemination of information or medical agent into a population.
 * Evidence that is descriptive, anecdotal, or authoritative.

Framework

3 Levels: (1) Individual, (2) Group/Community, (3) Organizational

Legend

4DSQ	Four-Dimensional Symptom Questionnaire	MS	Mastery Scale
ADS	Activity Discomfort Scale	NHIA	National Health Insurance Authority (Sweden)
BAI	Beck Anxiety Inventory	NRS-101	101-point Numerical Rating Scale
BDI	Beck Depression Inventory	OI	Oswestry Index
BHS	Beck Hopelessness Scale	OP	Occupational Physician
CSQ	Coping Strategies Questionnaire	PAIRS	Pain and Impairment Rating Scale
DRI	Disability Rating Index	PASAT	Paced Auditory Serial Addition Test
DWHQ	The Dutch Work and Health Questionnaire	PASS	Pain Anxiety Symptoms Scale
EPI	Eysenck Personality Inventory	PCQ	Perceived Employability and Disability
FCE	Functional Capacity Examination	PCS	Pain Catastrophizing Scale
FEKB	a German-language rating scale for pain-related coping behaviour	PDI	Pain Disability Index
FFbH	an assessment of deficiencies in daily activities according to a German scale	PDP	Pain Disability Prevention
GRWA	Graded Reduced Work Ability Scale	QBPDS	Quebec Back Pain Disability Scale
GSJ	Global Self-training Index	RAI	Rheumatology Attitude Index
HSCL	Hopkins Symptom Check List	SCL-90	Symptom Checklist - 90 items
ICPC	International Classification of Primary Care	SCL-90R	Symptom Checklist - 90 items, Revised
LBP	Low Back Pain	STAI	State-Trait Anxiety Scale
MCMI	Million Clinical Multiaxial Inventory	TSK	Tampa Scale for Kinesophobia
MHLC	Multidimensional Health Locus of Control questionnaire	UCL	Utrecht Coping List
MMCBT	Multimodal Cognitive-Behavioural Treatment	UHI	Ursin's Health Inventory
MMPI	Minnesota Multiphase Personality Inventory	VAS	Visual Analogue Scale
MPI	Multidimensional Pain Inventory	WAIS-R	Wechsler Adult Intelligence Scale - Revised
MPQ-SF	McGill Pain Questionnaire-Short Form	WHP	Work Harding Program
		WMS-R	Wechsler Memory Scale - Revised
		WRAT	Wide Range Achievement Test

Table 2
Study Participants

Background information	Total (<i>N</i>)	No.	% of total
Average age	13		
from 37 to 40 years old (37.0–40.9)		5	38.46%
from 41 to 46 years old (41.0–46.9)		8	61.54%
Gender	13		
Female		904	53%
Male		811	47%
Education	7		
Elementary school or less		2	n/a
High school or less		7	
More than high school		6	
Other		2	
Occupation	6		
Mentally demanding (e.g., manager, administration, teacher, white collar)		5	n/a
Physically demanding (e.g., construction, farming, blue collar)		5	
Mixed tasks (e.g., health services, transport)		5	
Other/unknown		2	
Initial employment status	12		
100% employed		9	75%
Mix (employed + unemployed)		3	25%
Initial absent-from-work status	14		
100% absent-from-work/sick leave		14	
sick leave < 6 months		5	n/a
sick leave < 12 months		3	
sick leave > 12 months		2	
sick leave > 24 months		1	
Unknown length of sick leave		4	

Note. Information presented here is for all groups involved in each study. Only one study found significant age differences between intervention and control groups. *N* = number of studies that provided information.

n/a = not applicable.

Table 3
Mental Health Components of RTW Interventions

Components of RTW intervention	No.	% of total
Cognitive behavioural	9	64.29%
Other psychosocial intervention	5	35.71%
Mental health related components ^a		
Coping strategies	6	n/a
Problem-solving strategies	6	
Stress management	3	
Belief/attitude adjustment	6	
Behavioural modification	2	
Goal setting	2	
Communication skills (e.g., assertive training)	4	

Note. n/a = not applicable.

^aNumbers add up to more than 14 because many studies used more than one mental health component in their RTW interventions.

Table 4
Methodological Aspects of RTW Interventions

	No.	% of total
Research design rating		
* (descriptive, anecdotal, or authoritative evidence)	2	14.29%
** (no randomized controls, no evaluation, and no intervention)	1	7.14%
*** (no randomized controls but includes evaluation)	5	35.71%
**** (properly conducted study but no randomization)	2	14.29%
***** (properly conducted study with randomization)	4	28.57%
Framework ^a		
Individual level	14	n/a
Group/community level	5	
Organizational level	7	
Include some type of follow-up		
Less than 6 months	2	14.3%
6 months to 1 year	9	64.3%
More than 1 year	3	21.4%

Note. n/a = not applicable.

^aNumbers add up to more than 14 because many studies included more than one level of framework.

Three out of six psychological RTW interventions had significantly positive effects on work outcomes compared with their control groups (see Table 5). Furthermore, 75% of the controlled trials that included mental health outcomes reported positive effects. Similarly, the same percentage was observed for trials conducted without a comparison group in terms of positive effects on mental health outcomes; two-thirds of the participants in these trials returned to work after the interventions. However, the RTW rate presented here should be interpreted with caution because the definition of RTW measures and the follow-up timeline varied from study to study.

Table 5
Effects of RTW Interventions on Outcome Measures

Study type	Work outcome measures (e.g., RTW ^a rate, shortened sick-leave duration)		Mental health outcome measures (e.g., psychological/cognitive)
	Total (N)	No. ^b	No. ^b
Randomized controlled trials	4	2	3 (out of 4 studies)
Controlled trials	2	1	0 (out of 0 studies)
Trials without randomization or control group	5	66.96%	3 (out of 4 studies)
Evaluation only	1	84%	n/a
Case study	2	100% ^c	n/a

Note. n/a = not applicable.

^aRTW = return-to-work, including both part-time and full-time jobs. ^bNumber of studies with significant effect(s) in the experimental group; for trials without a comparison group, RTW rate is represented instead for work-outcome measures. ^cData from one study were not available.

DISCUSSION

The objectives of this review were to describe psychological RTW interventions for people with mental health problems and/or physical injuries and to determine the impact of these interventions on work and health outcomes.

In most of the studies identified in this review, RTW interventions were based on a myriad of theories including the biopsychosocial approach (Haldorsen et al., 1998; Jensen, Dahlquist, Nygren, Royen, & Stenberg, 1997), the Rochester Model (Feuerstein, 1991) of work disability, Mayer and Gatchel's model (1988) of the functional restoration approach (Feuerstein et al., 1993; Hildebrandt et al., 1997; Vendrig, 1999; Vowles, Gross, & Sorrell, 2004), worksite disability management and industrial rehabilitation (Shery, 1995), and the cognitive behaviour therapy approach (Guleserian, 2002; van Der Klink, Blonk, Schene, & van Dijk, 2003).

Despite the heterogeneity of approaches or the type of components chosen, the most popular psychological intervention remained cognitive behavioural therapy (CBT) (9 out of 14 studies, Table 3). The cognitive behavioural RTW intervention was usually more effective than the treatment-as-usual control condition in improving the RTW rate, either fully or partially (Marhold, Linton, & Melin, 2001; van der Klink et al., 2003), and positive results were obtained for the treatment groups (Guleserian, 2002; Hildebrandt et al., 1997; Marlin, Anchel, Gibson, Goldberg, & Swinton, 1998; Nieuwenhuijsen et al., 2003; Sullivan & Stanish, 2003). When mental health effects were measured in the RTW interventions using CBT, self-reported disability, depression, psychological distress, perceived helplessness, and work satisfaction measures were more favourable in the treatment groups (Haldorsen et al., 1998; Hildebrandt et al., 1997; Jensen et al., 1997; Marhold et al., 2001; Sullivan & Stanish, 2003). Even though Hildebrandt et al. (1997) cautioned that the effectiveness of the multimodal approach could differ according to a specific country's working conditions and psychosocial norms, cognitive behavioural RTW interventions were found to be promising for treating mental health problems in people with musculoskeletal injuries, people with adjustment disorders, and even people with other mental health problems. However, the type of CBT used in these studies varied in both length and content, which ranged from improving coping skills to developing problem-solving strategies.

Regardless of the targeted approach, when depressive symptoms were assessed, the pre-treatment depression level was found to have the most significant impact on post-treatment work status (Sullivan & Stanish, 2003; Vowles et al., 2004). However, RTW interventions targeting employees with mental health problems only were underrepresented in this review (2 out of 14 studies), and were limited to adjustment disorders. In the Netherlands, adjustment disorders accounted for most of the psychopathology giving rise to the inability to work (approximately two-thirds of all cases), whereas psychiatric illnesses such as major depression, anxiety disorders, psychoses, and personality disorders accounted for only a small minority of cases (Nieuwenhuijsen et al., 2003; van der Klink et al., 2003).

Johansson, Dahl, Jannert, Melin, and Andersson (1998) stated that RTW is a commonly used index of rehabilitative success. However, the definition of RTW varied considerably in the studies; therefore, it was not possible to compare RTW rates directly across studies (Watson et al., 2004). RTW is sometimes measured by the length of sick leave (Marhold et al., 2001), at others times by the individual's readiness to return to work (Sullivan & Stanish, 2003), and at still other times by a full return to regular work (Vendrig, 1999). This lack of consistency in RTW assessment measures explains why some specific determinants can be significant while others are not (Corbière, Mercier, Lesage, & Villeneuve, 2005; Landstad, Vinberg, IvergÅrd, Gelin, & Ekholm, 2001).

In the future, several other key components could also be combined and integrated into RTW interventions for employees who have mental health problems with or without physical injuries. As such, Loisel et al. (2001) stressed the importance of including different stakeholders in the RTW process for people with musculoskeletal injuries. In their model, "interactions between stakeholders in the disability problem," Loisel et al. (2001) described four key players: the injured employee (primary focus), the workplace (employer and/or coworkers), the insurer, and health professionals. If all the key players work in concert and together tackle the difficulties in returning an injured employee to work, the results will likely be enhanced. In this vein, Nuttman-Schwartz and Ginsburg (2002) implemented

a program in the workplace where three parties were involved (injured employees, occupational social workers, and employers) in order to improve the RTW rate. The preliminary outcomes indicated that there was increased organizational awareness of the importance and possibilities of caring for injured employees. This program was continued for an additional year, and the employer changed its policy on coping with workplace-injured employees (Nuttman-Schwartz & Ginsburg, 2002).

Improved communication among the various parties affected by the work injury appears to be essential (Nuttman-Schwartz & Ginsburg, 2002), as does increased organizational involvement in the RTW intervention. One case study of an employee successfully returned to work proved that support for the injured employee from the organizational level made a difference (Guleserian, 2002). Other important aspects are the work- and nonwork-related social networks of employees with physical or mental health problems. Indeed, relationships with coworkers, supervisors, and family members play an important role in the process of returning employees to work.

In a community context, the principles of supported employment programs offered to people with severe mental illness, such as the integration of the vocational team with the treatment team and continuous outreach and follow-up, may also be useful in the RTW process for people with transitory mental health problems (e.g., adjustment disorders; Corbière, Bond, Goldner, & Ptasinski, 2005). In fact, some of the studies in this review explicitly mentioned that more active methods, such as reminders, outreach visits and, consequently, continuity of care, are beneficial and effective (Jensen et al., 1997; Nieuwenhuijsen et al., 2003).

Other recommendations (Vierling, 1999) are also proposed: RTW interventions should not only emphasize the physical rehabilitation of injured employees, but also engage them emotionally or psychologically as soon as possible after the onset of the mental/physical health problems. Given the current atmosphere of potential fear and distrust in the workplace, an injury can provide an opportunity to enhance the company's relationship with an employee. Employees who are absent from the workplace need to be kept informed of what is happening within the organization regarding their RTW; this communication appears to facilitate their RTW process. The bottom line is that the company's communication efforts, concern, and caring can positively influence every aspect of the employee's experience, including RTW readiness (Franché & Krause, 2002).

In conclusion, only 2 out of the 14 studies on psychological RTW interventions identified in this review were dedicated to people with mental health problems only (i.e., adjustment disorder), with the remaining 12 studies focusing on mental health problems associated with physical injuries. The most popular psychological components of RTW interventions remain coping strategies, problem-solving strategies, and belief/attitude adjustments. These components are most prevalent in cognitive behaviour therapy, and have led to significant and positive results in RTW and health outcomes. However, these results should be interpreted with caution because of the inconsistencies in outcome measures and the heterogeneity of intervention components between studies. Finally, other key factors in helping people return to work concern the communication between stakeholders and the involvement of each framework level (such as individual, group, and organization) in the RTW process, supported by follow-up in the community.

NOTE

1. Adjustment disorder is a psychiatric diagnosis that refers to a maladaptive reaction to an identifiable stressor (DSM-IV, American Psychiatric Association, 1994). Burnout and stress are often diagnosed as adjustment disorders (Bilsker, Gilbert, Myette, & Stewart-Patterson, 2004; Nieuwenhuijsen, Verbeek, Siemerink, & Tummers-Nijssen, 2003).

RÉSUMÉ

Les objectifs de la présente recension systématique des écrits sont de: (a) décrire les interventions psychologiques de retour au travail offertes aux personnes ayant des problèmes de santé mentale et/ou des lésions physiques; (b) résumer l'impact de ces interventions sur les résultats reliés au travail et à la santé. Trois méthodes conventionnelles et systématiques de revue de littérature ont été utilisées et 14 études ont été retenues. Les interventions psychologiques les plus populaires incluent des stratégies d'adaptation, des stratégies de résolution de problèmes et la modification des croyances et attitudes. Ces composantes sont souvent regroupées sous le nom d'approche cognitive-comportementale au sens large, laquelle présente des résultats significatifs en termes de retour au travail et d'amélioration de la santé. La communication entre les personnes clés et l'implication de chaque niveau structurel (individu, groupe et organisation) dans le processus de retour en emploi, soutenu par un suivi dans la communauté, sont aussi des éléments clés pour de meilleurs résultats.

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