

Return to Work Following Low Back Pain

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Abstract: Low back pain (LBP) is a highly prevalent cause of disability and one of the most expensive health conditions. Along with personal suffering, LBP can result in decreased productivity and absenteeism. It is also one of the leading causes of lost work time. Rather than viewing work resumption as a discrete event, returning to work after an episode of work disability can be viewed as process that encompasses a series of events, transitions, and phases, and includes interactions with other individuals and the environment. The return to work (RTW) process is conceived of as the process workers go through to reach, or attempt to reach, their RTW goal (typically a return to their pre-disability work participation). The process is thought of as beginning at the onset of work disability and concluding when a satisfactory long-term outcome has been achieved. A successful RTW coordination seems more based on ergonomics job accommodation, communication, and conflict resolution rather than on medical or purely biomechanical knowledge. It is very substantial for Rehabilitation Medicine to pay attention to this need to achieve the goal of LBP clients to RTW successfully.

1 INTRODUCTION

In industrialized countries, a musculoskeletal disorder of the back or low back pain is among the leading causes of occupational injury and disability. Even though in most cases patients make a full recovery from an episode of low back pain (60-70 % recover within 6 weeks, 70-90 % within 12 weeks) this still adds up to a large amount of lost time from work. Besides, the recurrence rate for low back disorders is also very high. In one year, the recurrence rate is between 20% - 44% and over a lifetime recurrence of up to 85% is reported. It is important to remember that once injured, the back becomes more susceptible and re-injury is likely to develop if there are risk factors in the workplace that are not corrected.

Low back disorders include spinal disc problems such as hernias and spondylolisthesis, muscle and soft tissue injuries. In addition to the normal degenerative aging process, epidemiological studies reveal that poor ergonomic factors in the workplace contribute to low back disorders in a healthy back or accelerate existing changes in an already damaged back. Poor ergonomic work factors increase the load or strain on the back. This may arise from many

situations, for example, lifting, twisting, bending, awkward movements, stretching, and static postures. Tasks include physical work, manual handling and vehicle driving (where whole-body vibration is known to be another contributing factor).

Many reviews have been published of studies concerning the risk factors of low back disorders, including a multitude of physical, psychosocial and/or personal risk factors. The evidence to link psychosocial factors with low back disorders is growing, especially where they occur at the same time as the physical factors. The incidence of low back disorders has also been strongly associated with low job content and poor work organization.

Some work factors increase the risk of low back disorder, one stated is physical aspects of work, such as heavy physical work, lifting and handling of loads, awkward posture (bending, twisting, static postures) and whole-body vibration. While the other factor is psychosocial work-related factors that relate to low social support and low job satisfaction. One more factor is work organization factors which include poor work organization and low job content.

Workers should pay attention to these risk factors when making an assessment and selecting prevention measures. They include the

characteristics of the load (for example: is it heavy or difficult to hold), physical effort required (for example: strenuous; twisting; body in an unstable position), characteristics of the working environment (for example: not sufficient room or other constraints on the posture of worker such as working height too high or low; uneven or slippery flooring), requirements of the activity (for example: prolonged activity or effort; insufficient rest periods; excessive distances to move loads; imposed work rate), individual factors (for example: clothing etc. restricting movement; inadequate knowledge or training).

2 DISCUSSION

2.1 The Clinical Examination Of Workers With LBP Complaints

A primary goal of the initial evaluation is to distinguish low back pain/strain, which is generally self-limited and is not associated with neurological dysfunction, from the disorders of the low back which are associated with neurological signs and symptoms. The interview should obtain complete occupational and medical history. Special emphasis should be placed on the characteristic of the pain, previous response to treatment if any. Work modifications also should be explored, subjects may be asked to fill in a standardized questionnaire for screening.

The assessment should include an investigation of the signs and symptoms of spinal abnormalities and movement dysfunctions, especially of the lower back, utilizing standardized approaches and tests. When a series of positive so-called "Waddell signs" should prompt the examiner to investigate psychological problems or psychosomatic disorder.

2.2 RTW Prognosis

Many studies results indicated that it is important to recognize patients who may be at risk of long-term disability and failure to RTW. Definitions of long-term disability and failure to RTW are important from this point of view. Psychological and occupational factors have a direct impact on RTW. Female gender, lower educational level, longer hospitalization period, greater BMI, biological age exceeding 40 years, employment in manual labor, lack of encouragement by the physician to RTW, being in pain at the time of phone interview,

negative expectations about the outcome of surgery preoperatively, and low work satisfaction were associated with higher frequency of delayed RTW and failed RTW. Appropriate strategies and teamwork involving the patient, surgeon, rehabilitation therapist, occupational medicine specialist, and an employer could enhance RTW. However, further investigations are required in this respect.

To get a more detail acknowledgment of the work-risk factor, a scheme was developed using a different color of flags.

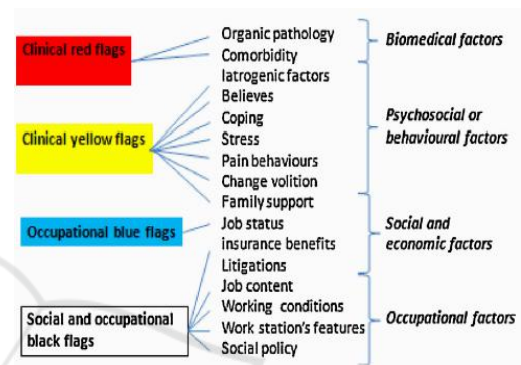


Figure 1: Synthesis of red, yellow, blue and black flags for low back pain workers.

The purely biomedical model is insufficient to explain the complexity of persistent LBP. Thus, some so-called "psychosocial" factors seem to be frequently associated with LBP progressing to chronicity. Furthermore, individual, occupational and organizational factors influence the risk of progressing towards long-term incapacity and never returning to work. It is also recommended to evaluate prognostic factors, i.e. psychological and behavioral factors ('yellow flags') that could influence the progression to chronicity as well as socio-economic and occupational factors ('blue' and 'black' flags), which could impact long-term work incapacity and delay the RTW (Fig. 1). This assessment may require several consultations or interviews in complex cases and must be coupled with a thorough search for clinical symptoms of LBP severity ('red flags') regardless of the LBP stage: acute, subacute or chronic.

In Netherland, a systematic review was set out to help find pieces of information about RTW prediction. The goal was to answer this question: What factors affect the time until RTW among workers who are at the beginning of sick leave related to low-back pain? A review team included 4 researchers from the Institute for Work & Health

(IWH) and a fifth from a university in The Netherlands. The researchers involved in the recent review looked for articles related to prognosis, back pain and return to work in 3 databases, published up to April 2011. The initial search yielded 4,449 research papers. In the end, 30 papers from 25 different studies were considered relevant to the systematic review question. The quality of each of these studies was then assessed using a rating system. Five studies were rated as high quality, 13 as moderate quality and seven as lower quality.

The main findings were there was strong evidence showing that the following factors influence RTW among those with acute low-back pain (as the synthesis model scheme above):

- Workers' recovery expectations/beliefs (i.e. their predictions about how likely it is they will return to work and/or how long it will be before they can return);
- Workers' interactions with health-care providers (i.e. type of health-care provider seen and nature of care received);
- Workers' self-reported pain and functional limitations;
- Presence of radiating pain (an indication of the severity of the injury); and
- Work-related factors, including physical demands of the job, job satisfaction and the offer of modified work.

The conclusions revealed workers' recovery expectations are the strongest predictor of return to work, being supported by the most high-quality studies. That is, those who expect to recover and return to work more quickly, will do as expected. Therefore, a simple question asking about recovery expectations during the screening or assessment of workers in the early stages of acute low-back pain could help identify those at high risk of long work absences and, in need of extra attention to help them recover and return to work more quickly.

The next factor supported by strong evidence is the nature of treatment care workers receive for their acute low-back pain. In other words, the type of health-care provider (and, thus, the type of care provided) matters. For example, some studies show that seeking care from a chiropractor result in a shorter time on disability.

There is strong evidence to show workers' reports about their pain intensity and functional limitations are predictive of return to work: the greater the self-reported pain and physical limitations, the slower the return to work. Since both can be easily measured in several ways with well-validated questionnaires, they should be included in

assessments to determine those at high risk of long-duration absences.

There is strong evidence to show that the presence of radiating pain is associated with longer periods off from work. However, radiating pain—often used as a measure of injury severity—is usually considered to be a "red flag" during clinical assessments, an indication of potential neurological problems that warrant further medical investigation. For that reason, some people view this more as a screening factor for more specific, less benign low-back pain.

A few work-related factors are supported by strong evidence as being predictive of return to work. Physical job demands, as determined by occupation, is one of them. That is, workers with acute low-back pain who work in more physically demanding jobs, such as construction or manufacturing, are slower to return to work.

Job satisfaction is another work-related factor shown to be predictive of RTW; the higher the satisfaction, the more likely the return. Although job satisfaction is probably related to any number of factors at work, a simple question asking about job satisfaction can be used at the very start of a work disability process to identify those at high risk and in need of extra attention.

The offeror availability of modified duties or workplace accommodations is another work factor associated with improved RTW outcomes. Interestingly, it seems the offer of modified work, not its actual implementation, predicts the likelihood of a return to work.

The evidence did not point to depression as a factor affecting RTW following acute low-back pain. Neither did it point to pain catastrophizing. It could be that both are not predictive of return to work until back pain becomes chronic (long-term). Finally, opioid use for pain management has been a factor of great interest recently. However, it had not yet been studied enough to show up as a predictive factor in systematic reviews.

2.3 Functional Evaluation

Patients' perception of their incapacity is closely related to the barriers involved in resuming activities, especially RTW. Absence or low progression of the patient's incapacity perception might mean that obstacles to resuming activities and RTW do exist and need to be identified to be dealt with. Therefore, it is recommended to evaluate early on and repeatedly: pain, functional incapacity, and their impact, as well as the main factors of work-related

long-term incapacity. Evaluating the functional pain status of LBP patients enables, not only to quantify the physical, social and occupational consequences of LBP but also helps appreciate treatment effectiveness. The impact of non-specific LBP can be identified via pain self-evaluation and perceived functional incapacity questionnaires but also using functional capacities assessment tests (Table 1). Of note, these parameters are related to each other in a subtle manner and are influenced by multiple factors and only a complete evaluation of the different pain components can lead to a global vision of the pain itself. Therefore, it is recommended to use the VAS (Visual Analog Scale) (Table 1). It is also important to periodically assess the workers' progress, give them information back and above all support and encourage them.

There is great variability in the objectives and content of questionnaires evaluating the functional impact and quality of life alterations related to LBP, but only some are acceptable and validated: the Roland-Morris questionnaire, the Oswestry and Dallas questionnaires, the Quebec scale and SF-36 quality of life questionnaire (Table 1). Finally, the evaluation of functional capacities validated by physical tests can help write appropriate advice in regards to the right time when patients may resume work and/or which advice should be shared with them. This functional capacity assessment should be conducted each time a significant decrease in activity or absenteeism can be suspected during the progression of LBP. Several specific tools have been developed but only a limited number of them have been scientifically studied to document their metrological properties, which vary according to each tool (Blankenship System, ERGOS Work Simulator, Ergo-Kit, Isernhagen Work System).

Table 1: Recommended tools for the assessment of low back pain-related functional incapacity.

Assessed parameters	Recommended tools
Pain	Visual Analog Scale (VAS)
Occupational factors of prolonged incapacity	O'rebro Musculoskeletal Pain Screening Questionnaire (O' MPQ)
Functional incapacity	Roland-Morris Disability Questionnaire and Dallas Pain Questionnaire
Low back pain worker's beliefs	Work subscale of the Fear-Avoidance Beliefs Questionnaire

2.4 Coordination Of Intervention

Multidisciplinary Biopsychosocial Rehabilitation (MBR) was defined as an intervention that involves a physical component (for example an exercise program) and at least one other element from the biopsychosocial model, that is psychological or social and occupational. The intervention program had to have been delivered by clinicians from different disciplines, which is a minimum of two healthcare professionals from different professional backgrounds who had to be involved in the intervention delivery. The different components of the intervention had to be offered as an integrated program involving communication between the providers responsible for the different components. It is expected a full team which would include a physiatrist, psychologists, physiotherapists, social workers, occupational therapists, and orthotist.

Most recently, the interventions have focused on the workplace environment to improve the support of upper management and colleagues or reduce work-related physical constraints. A successful RTW coordination seems more based on ergonomics job accommodation, communication, and conflict resolution rather than on medical or purely biomechanical knowledge. The pre-RTW consultation(s) are precisely the right means to promote dialogue between all actors involved and the coordination of their actions.

2.5 Work Hardening

Work hardening is a work-oriented treatment program that has an outcome that is measured in terms of improvement in the client's productivity. This is achieved through increased work tolerances, improved work rate, mastery of pain (through the effective use of symptom control techniques), improved work habits, increased confidence, and proficiency with work adaptations or assistive devices. Work hardening involves the client in highly structured, simulated work tasks in an environment where expectations for basic worker behaviors (e.g., timeliness, attendance, and dress) are in keeping with workplace standards. The ultimate goal of work hardening is to help the client achieve a level of productivity that is acceptable in the competitive labor market. This productivity improvement is achieved at various levels through the following techniques:

- A decrease in secondary impairment effects. Impairment is often magnified through disuse.

Work hardening improves strength, flexibility, and endurance.

- A decrease in functional limitations. The client's style of work and the quality of his or her work behavior often increases the functional decrement due to the impairment. Work hardening helps the client learn effective adaptive behaviors.
- A decrease in disability. Disability is the impact of functional impairment on the client's societal roles, among which work roles are prominent. Work hardening helps the client reestablish many of these roles. Improvement in these other areas generalizes to work roles and results in a concomitant decrease in work-related disability.
- Improvement of vocational feasibility. Feasibility, which is the client's acceptability as an employee, is a key issue in work hardening. Most clients with chronic industrial injuries have not worked for several months. Thus, work hardening identifies and remediates potential problems with productivity, increases safety in the workplace, and strengthens interpersonal relations.
- Improvement of employability. Employability, which is the probability that the client will achieve employment, is a consequence of the levels of the client's work tolerances (e.g., ability to lift, carry, and stand) compared with the tolerances of other workers in the general labor market. Work hardening identifies and develops these work tolerances.
- A decrease in vocational handicap. The match between the client and job can be improved by increasing the client's level of function and by modifying the job's critical work demands.

The role of the rehabilitation team in the WH program should be made in uniform treatment planning and patient management. The rehabilitation team (which comprises the physiatrist and therapist involved, at a minimum) is responsible for assessment, treatment planning – including the global and weekly goals – and therapy. The team approach must also guarantee the "unité de doctrine"[uniform doctrine] regarding the method and program structure as well as the information that is given to the client.

2.6 Symptoms of Negotiation Training

Many clients with chronic back pain cannot "negotiate" effectively with their symptoms or cope with their pain. They experience their symptoms as

being more or less beyond their control. As they cannot predict the pain behavior, they feel unable to exert control over their pain, themselves and their environment. This, in turn, increases the lack of self-efficacy. Symptom negotiation training is, therefore, an important training element for these clients in a WH program. It is based on the following principle: when symptoms can be predicted, they can be better controlled. To achieve this, the therapist must create situations in which the symptoms appear predictably and for which prediction and control by the client are facilitated. The most important strategies for symptom negotiation training are:

- Graded activity

This approach is based on a task presenting a gradually increased activity level. The starting point and the increment are set by the therapist in such a way that a clear relationship between activity and symptoms can easily be felt by the client. For example, in a progressive lifting test, load, lifting height, speed or rate can be increased. The purpose of this exercise is not, however, to evaluate lifting performance, but to clarify the connections between stress level of the task and symptoms. Some clients have initially to learn to differentiate pain levels as shades of grey rather than as black-or-white (i.e., either no pain or catastrophic pain).

- Graded exposure to feared movements

This method resembles the "graded activity", but clients are exposed as realistically as possible to the specific physical stress that they are afraid of: "For example, if the patient fears the spinal compression produced by riding a bicycle on a bumpy road, then the graded exposure should include an activity that mimics that specific activity, and not just a stationary bicycle. Such an approach allows the individual to correct inaccurate predictions about the relationship between activities and harm".

- Pacing

Clients with painful disabilities often function according to an "on/off" principle ("Yes, I can" or "No, I can't"). They should experience that by adjusting their working pace there are intermediate options: e.g., doing things slower, making short breaks, doing some stretching, loosening up or relaxing exercises in between, alternating work activities, etc. Modification of working techniques, tools or workplace. Many clients with pain-related disabilities have not yet learned to appreciate the value of working smart rather than working hard. They keep on working as uneconomically as they did before the accident/disease or even worse. Ways of modifying working techniques and requirements as well as tools and workplace should be evaluated.

- Coping with exacerbated pain

Exacerbation of pain during rehabilitation is a challenge for a client's self-management and should be used for the education of proper pain behavior. Clients should learn to avoid panic and assess the pain situation realistically, and to avoid, for instance, alarmed consultations at emergency wards. They should apply the learned self-treatments for pain relief (e.g. cool packs, relaxation techniques, the meaningful use of medicaments) and analyze the likely causes of the acute pain attack.

It is important to give a core message to the patient, related to their back pain, at the beginning of the WH program:

- Chronic pain does not mean harm! It is not dangerous to move and stress your body when you are in pain! This is necessary to escape from the vicious circle of avoiding physical activity, loss of fitness and pain;
- Chronic pain usually cannot be reduced in a short time. However, it is possible to increase performance capacity with intensive training despite the pain. In many cases, a reduction in pain will then occur in the long term;
- Some pain increase usually occurs at the start of the program as under-used muscles and joints are now trained, and the body has to readapt to higher activity level. This is normal!
- In this program, the primary goal is not pain reduction but *increasing your performance capacity*. This will be measured weekly as the main criterion for program goals. An intensive training program creates the prerequisites for a successful return to work.

To recommend discharge of WH program with a return to a specific job, the team has to demonstrate, based on results of FCE (Functional Capacity Evaluation) tests, that the worker has reached the goals stated in the plan or a plateau in his/her functional levels. For those clients with a specific job to return to, the care providers must document the worker's ability about the job requirements, and the discharge recommendations may consist of the following options: return to work with full duty, modified duty, or reasonable accommodations.

3 CONCLUSION

Studies' evidence to date shows certain factors can be used to identify workers with acute low-back pain

who are at high risk of poor outcomes. The factors identified in this review, such as recovery expectations, interactions with health-care providers, self-reported pain and physical limitations, and physical demands of the job, could be used to screen those workers at high risk of long-term or permanent disability.

Work hardening is a new specialty within rehabilitation. It is addressed by several different disciplines among which occupational therapy has taken a leadership position. Work hardening is an important new approach to the rehabilitation of injured workers and others whose entry into the workforce is under consideration.

RTW is ultimately a social phenomenon that requires a supportive social policy that will enable all the players to work together. Although proper individualized RTW coordination is useful and important, it cannot overcome policies that marginalize workers or interfere with safe and sustainable RTW.

Because many of the analyzed studies have some methodical shortcomings and multidisciplinary return-to-work programs are expensive and need to demonstrate their cost-effectiveness also in the long term (to demonstrate their benefit and justify reimbursement), there is still the need for high-quality trials in this field to address issues such as patient selection, the optimal intensity and duration of programs, and the most effective treatment components.

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