

Prévention en pratique médicale

MODIFIED WORK AND MUSCULOSKELETAL DISORDERS

Preventive action

- The 1998 Quebec Social and Health Survey showed that musculoskeletal disorders (MSD) are the main cause of disability in Quebec. A significant proportion of these disabilities are work related.
- According to the survey, one out of four workers reported having pain in the lower back that disrupted his or her activities quite often or all the time over a 12-month period. Almost one out of five workers reported feeling pain in the upper limbs, and one out of ten in the cervical region. Over half of the workers believed their pain was linked to their job.
- A Health Canada study by Moore et al. on the economic burden of illness, disability and premature death in Canada in 1993 showed that musculoskeletal disorders (\$17.8 billion) and accidental injuries (\$14.3 billion) were second and third highest in cost after cardiovascular diseases (\$19.7 billion). The total amount spent on disease and disability was \$156.9 billion.
- In 2002, the CSST paid out about \$1.24 billion for occupational injuries and disorders to approximately 150 000 workers. In Montréal, from 1995 to 2000, MSD represented 40% of occupational injuries and disorders, and almost half of the total number of days for which compensation was paid.

This document describes the principles to consider for the return to work or the maintenance at work of workers with musculoskeletal disorders of the back, neck or upper limbs. These principles are relevant when evaluating an employer's modified work proposal in cases that may or may not be eligible for CSST compensation, or for any other modified work or temporary reassignment, whether for personal reasons or due to MSD problems not requiring an absence from work.

Preventing long-term disability

A review of the scientific literature reveals that when well-conceived, modified work measures can be beneficial to a worker with a musculoskeletal disorder (MSD). Prolonged inactivity is usually harmful to the healing process of a person with MSD. The regular work environment is the best place for early rehabilitation, as long as the individual's work is productive and perceived as valued. To encourage healing, avoid aggravating an injury, or prevent a relapse, the tasks assigned to a worker should correspond to his or her functional capacity. Work demands can be increased as the functional capacities of the injured worker improves, until he or she can resume regular duties.

Managing workers with MSD

According to the Canadian Medical Association's return-to-work policy (2000), the role of the physician is to incorporate a timely return to work into the patient's care plan. The physician should:

1. obtain a medical history and conduct appropriate examinations to determine the diagnosis and functional capacity of the patient;

2. discuss with the patient the expected recovery time and the positive effect that an early, graduated increase in activity and return to work can have on healing;
3. assess the relationship between patient's residual functional capacities and his or her work tasks;
4. if needed, assess the appropriateness of the tasks proposed by the employer in light of the patient's functional capacities;
5. convey the functional limitations of the worker to the patient and the employer;
6. include a return-to-work plan based on recovery of functional capacities;
7. monitor the patient closely and regularly.

Psychological, social, or family-related factors that can influence the patient's return to work and rehabilitation should also be considered. Moreover, the treatment plan should be evidence-based.

How is "temporary assignment" defined under Quebec law?

"Temporary assignment" or "modified work" refers to the work assigned by employers to workers who have suffered work-related injuries. In Quebec,

employers will often request early return-to-work by proposing temporary assignments to attending physicians. It is up to physicians to decide whether the work is without danger to patients' health and appropriate to the workers' state of health. Section 179 of the Act respecting industrial accidents and occupational diseases (AIAOD) allows employers to temporarily assign work to employees until they are able to return to their jobs or perform tasks that are suitable to their state of health. For workers compensated by the CSST, the attending physician must agree with the employer before the latter assigns the worker to a temporary position. The physician must then provide an opinion on the three following points:

The work must:

1. reasonably be able to be carried out by the employee;
2. not endanger the worker's health, safety or physical well-being, given his or her injury; and
3. promote the worker's rehabilitation

No appeal can be legally launched if an attending physician refuses or neglects to come to a decision on the temporary assignment. Neither the employer nor the CSST have the right to contest the attending physician's opinion. However, a worker can appeal by making use of the procedure provided in Section 37 of the Act respecting occupational health and safety.

Nothing prevents an employer from using the same process in cases not compensated by the CSST.

How to evaluate a modified work proposal

The physician's role is to assess the appropriateness of the work proposed to the worker given his or her injury and capacity to work. A medical evaluation should allow the physician to determine a worker's capacities as well as the employee's perception of his or her ability to carry out these tasks.

Personnel acting on behalf of the employer, often a supervisor or a human resources employee, frequently acknowledge that they do not know a great deal about MSD or ergonomics. Therefore, it is important that the treating physician assess the physical demands of the tasks given the results of the medical evaluation and not assume that the proposed work assignment is appropriate.

The attending physician should not hesitate to recommend modifications to the temporary assignment or identify work restrictions. It is also essential that the patient be closely followed or be able to reach the attending physician easily in the days after he or she starts the modified work assignment. This follow-up allows the physician to propose any necessary changes to the modified work assignment. Periodic follow-up is also important, with the interval between visits varying depending on the injury.

How can physicians determine the physical demands of work from their offices?

To assess the physical demands of work, one should be able to observe work activities. The physician rarely has the opportunity to do this. Therefore, the demands of work must be assessed based on the patient's perceptions and information provided by the employer. Nonetheless, the physician can establish the nature of the physical work demands associated with the proposed tasks by carefully questioning the worker, or sometimes the employer.

It is also important to remember that for each physical demand, the risk of aggravating an injury or of reinjury increases with:

- **Intensity of effort**

Intensity is mostly related to the range of movement, weight of objects handled, and applied force required to accomplish a task.

- **Duration of the effort**

The longer the worker is required to provide an effort, the higher the risk.

- **Frequency of the effort**

The more often a worker repeats a movement or adopts a posture, the higher the risk.

The combination of these aggravating factors increases the risk even more. The risk associated with high intensity is multiplied by sustained frequency and duration. For example, for someone handling materials (work demand), lifting a heavy object (intensity) is riskier when it is done frequently (frequency) or for a long time (duration).

$$WD \propto I \times D \times F$$

To evaluate the risk associated with the proposed work assignment, the physician should determine the scope of physical requirements of the job, based on the information in the tables (see pages 3-4) which present the main physical demands according to three types of MSD:

- 1) Back pain,
- 2) Neck or shoulder MSD,
- 3) Elbow, hand or wrist MSD.

This information can help the physician determine whether the assigned tasks are appropriate to the patient's functional status.

What to do when there is uncertainty?

Some cases are complicated because the worker has difficulty answering questions about the job or the tasks assigned are poorly described or unspecified. The employer usually appreciates receiving a call from a worker's physician asking for further explanation about the job. It may also be relevant to ask for other professional opinions. For example, an assessment of work capacity or a more exhaustive evaluation of job demands can be requested from an occupational therapist, an ergonomist, a physician specialising in occupational health, or another professional with recognised expertise in these fields.

When attempts to maintain or return the individual to work fails, it is possible to refer the worker to a multidisciplinary clinic specialising in work rehabilitation. Usually, these teams are composed of ergonomists, occupational therapists, psychologists and medical specialists who can better evaluate the occupational factors, capacity to work, or psychosocial factors of the worker that have contributed to this situation.

Elements of successful return-to-work

In addition to worker motivation and the employer's willingness, the physician also plays a major role in successful return to work. The physician must inform the patient of the diagnosis, treatment plan, prognosis, as well as the estimated duration of absence

from work and of modified work duties. The physician must also answer the patient's questions, respond to his or her fears, and be available if the worker has difficulties. The physician should also be in touch with the employer to discuss the temporary assignment and any modifications required to accommodate the patient's functional capacities.

The physician should understand that for the employer, maintaining or returning a person with an MSD to work is often a very complex issue. The work assigned must be productive for both the employer and the worker. The physician needs to consider the clinical evaluation, the patient's work capacities, and the demands of the assigned tasks before providing his or her conclusions, all the while keeping in mind that the message must be clear and easy to understand.

It is often easier for physicians to describe patients' functional restrictions than to assess the physical demands of jobs that cannot be observed. Physicians can provide employers with work restrictions and request a modified work proposal that respects these restrictions. When physicians recommend that patients return to work even though they are unable to perform all their regular functions, it is essential to indicate work restrictions instead of prescribing non-specific "light duties."

The physician can make it easier for the employer to choose modified work tasks by articulating clear and specific work restrictions relevant to the physical demands of the job to be assigned to the patient. By closely evaluating the proposed work tasks with respect to the physical demands and the type of injury, the physician can ensure that these tasks are appropriate to the patient's rehabilitation. Finally, by making himself or herself available to the worker and employer, the physician will avoid the uncertainties that can cause errors of judgment and ultimately contribute to chronicity in this complex process of return to work of workers with MSD.

TOOLS FOR PHYSICIANS

We need your comments on
work restriction forms

Three work restriction recommendation forms are posted on the Montréal Public Health Department Web site at www.santepub-mtl.qc.ca/Publication/telecharg.ppm.html. The forms are adapted for people with disorders of the back, neck or shoulder, and elbow, wrist or hand. A team of Public Health researchers is validating the forms and would like your comments on them and their usefulness in your practice.

Email: jcloutie@santepub-mtl.qc.ca

Table 1.
Physical demands and principles associated with back pain

Work demands	Principles
<p>1. Material handling</p>	<ul style="list-style-type: none"> • Risk of back injury increases with the weight of objects, the number of times the task is performed and the duration. • Picking up or putting down an object above shoulder-height or away from the body is demanding on the back and shoulders. • Picking up or putting down an object below the knees also poses an important load on the back. • Handling an object that is difficult to grasp (e.g. an object that is slippery or fragile, or whose weight is unevenly distributed) increases the effort required and the risk of making a sudden movement to keep hold of the object. • Carrying an object is harder on the back if it needs to be taken up or down stairs or on an incline. • Increasing the distance walked while carrying an object increases the duration of handling and therefore the risk for the back. • Handling an object when the back is twisted increases the risk of back injury.
<p>2. Effort associated with pushing or pulling objects or equipment</p>	<ul style="list-style-type: none"> • Risk increases with the intensity of the effort. In other words, the more force the worker has to apply, the higher the risk for the back. It is usually harder on the back to pull than to push. • Pulling an object or equipment that is above shoulder height or below the waist usually causes a person to adopt postures that are demanding on the back. • If the floor or ground is steep, inclined, strewn with obstacles or very narrow, more effort is required to pull or push.
<p>3. Demanding work postures</p> <ul style="list-style-type: none"> • Sitting or standing • Kneeling or crouching • Precarious positions • Arms held out in front with no support • Torso or arms: <ul style="list-style-type: none"> - flexed, extended, twisted, rotated 	<ul style="list-style-type: none"> • Maintaining the same sitting or standing posture for long periods of time without the possibility of changing position can exacerbate a back problem. • People with back pain should be able to vary their sitting or standing posture, regardless of production requirements. • When working in a standing position, work that allows one to move around is less demanding than having to stand in a static position. • A back problem can be aggravated if there is no support to the lower back or if feet are not flat on the ground. • The more extreme the angle of the posture, the more demanding it is on the back. Even if the angle of body posture is not very extreme, it can represent a heavy load for the back if it is maintained for a long period of time. • Working with outstretched arms without support is very demanding on the back. • The risk associated with a demanding posture increases when physical effort or force is exerted at the same time. • When foot movement is limited, such as on a ladder rung, having to adopt precarious positions to reach objects can pose a risk of back injury.
<p>4. Walking</p>	<ul style="list-style-type: none"> • Walking quickly or for a prolonged period, even without carrying a load, can be difficult for some people with back pain. • Any sudden change in direction, or sudden stops or starts can exacerbate a back problem.
<p>5. Operating a foot pedal</p>	<ul style="list-style-type: none"> • Operating a pedal, especially while standing, causes the back to be in an asymmetrical position and can require the person to be in a static position. • The further the pedal travels and the greater the force applied, the more difficult it is on the back. The more often the pedal is activated, the greater the risk for the back.
<p>6. Driving mobile equipment</p>	<ul style="list-style-type: none"> • Driving a vehicle can expose a worker to whole-body vibration and to possible impact shock due to the ground being uneven or to the way the vehicle is used. • The vehicle's suspension system and seat adjustment will affect physical stresses on the back. • Driving certain vehicles (e.g. a forklift) can cause a person to adopt a posture that is demanding on the back, such as when the driver backs up and looks behind, twisting the back. • Driving a vehicle can require that a driver remain in a static position. The longer the position is maintained, the more demanding it is.
<p>7. Exposure to other sources of whole-body vibration (from machines, equipment or the floor)</p>	<ul style="list-style-type: none"> • Whole-body vibration, whether transmitted from the floor or through direct contact with the source of vibration, can lead to or aggravate back pain.

Table 2.
Physical demands and principles associated with neck and shoulder MSD

Work demands	Principles
1. Material handling	<ul style="list-style-type: none"> • Same as in Table 1, point 1.
2. Other efforts requiring use of arms - pulling, pushing, lifting, lowering, turning, etc.	<ul style="list-style-type: none"> • Same as in Table 1, point 2.
3. Repetitive arm movements	<ul style="list-style-type: none"> • Even if the range of movement is limited and the effort required is minimal, repetitive movements of the arms or head can lead to neck or shoulder problems.
4. Demanding work postures • Neck - flexion, extension, rotation, lateral flexion • Shoulder - flexion, extension, abduction, rotation, elevation	<ul style="list-style-type: none"> • The angle of the posture, even if it is not extreme, can represent a heavy load if it is maintained for a long period of time (e.g. holding the arms up without support). Contracted muscles tire much more quickly when held in a static position. • Static muscle contraction is not always easy to identify because of the absence of movement. • The risk associated with a demanding posture increases when force is exerted at the same time.
5. Hand-arm vibration (from tools)	<ul style="list-style-type: none"> • Exposure to hand or arm vibration can aggravate a shoulder problem.

Table 3.
Physical demands and principles associated with elbow, hand, and wrist MSD

Work demands	Principles
1. Efforts of the hands or fingers	<ul style="list-style-type: none"> • The risk increases with frequency, duration and intensity of effort. • Holding or gripping an object with the tips of the fingers is much more demanding than holding or gripping with the whole hand. • Holding an object that is slippery, wet or soft while wearing gloves requires greater effort.
2. Demanding work postures • Elbow - flexion or extension of the wrist or fingers • Wrist - flexion, extension, ulnar deviation, radial deviation • Thumb - flexion of the distal phalanx, abduction, repetitive flexion or extension with force	<ul style="list-style-type: none"> • The risk associated with supination or pronation of the forearm is higher when holding an object at arm's length extended elbow (i.e. with elbow). • The risk associated with these postures is greater when combined with repetition or force. • Pronation of the forearm and extension of the wrist or fingers can aggravate a lateral epicondylitis. • Supination of the forearm and flexion of the wrist or fingers can aggravate a medial epicondylitis.
3. Vibration or impact shock from tools	<ul style="list-style-type: none"> • Exposure of hands to vibration or impact shock from tools can aggravate a problem of the elbow, hand or wrist. • The risk from vibration increases with duration and intensity of exposure. The risk associated with impact shock increases with frequency and intensity.
4. Pressure points or rubbing at the elbow, hands or wrist	<ul style="list-style-type: none"> • Prolonged rubbing or contact with a hard surface can compress the nerves or damage other tissues.

www.santepub-mtl.qc.ca



For bibliographic references on modified work, visit our Web site at:
www.santepub-mtl.qc.ca/Publications/telecharg_ppm.html



A publication of the Direction de santé publique de Montréal-Centre in collaboration with the Association des médecins omnipraticiens de Montréal as part of the Prévention en pratique médicale programme coordinated by Doctor Jean Cloutier.

This issue is produced by the Occupational and Environmental Health Unit.

Head of the unit: Dr. Louis Drouin

Editor-in-chief: Louis Patry

Editor: Elisabeth Pérès

Graphic design: Manon Girard

Translation: Sylvie Gauthier

Texts by: Dr. Susan Stock, Sonia Paquette, erg. CPE

Contributors: Dr. Jean-Pierre Villeneuve, OMRT research team

1301 Sherbrooke Street East, Montréal, Québec H2L 1M3
Telephone: (514) 528-2400

<http://www.santepub-mtl.qc.ca>

email: jcloutie@santepub-mtl.qc.ca

Legal deposit – 4th trimester 2003

Bibliothèque nationale du Québec

National Library of Canada

ISSN: 1481-3742

Agreement number: 40005583



Direction de la santé publique



Association des Médecins Omnipraticiens de Montréal