



SWEDISH  
WORK  
ENVIRONMENT  
AUTHORITY

M

**usculoskeletal  
injuries?**

– No, thanks!



## How to reduce musculoskeletal injuries

Ergonomics for the prevention of musculoskeletal disorders deals with working postures, working movements, physical loads and other conditions that can influence the muscles and joints in the human body. This involves for example the design of work premises, work stations, work tools, surroundings and the way in which work is organised as well as the psychological and social conditions in the workplace.

This brochure is based on the Provisions in Ergonomics for the Prevention of Musculoskeletal Disorders, AFS 1998:1. The brochure's purpose is to clarify the responsibilities of the employer and employees for the prevention of injuries resulting from incorrect handling of inappropriate loads. Examples are given of procedures which the employer and employee can follow. It includes a checklist for the identification of risk sources. The brochure also deals with the obligations of other parties with work environment responsibilities.

## Create a healthy work environment for the body

The employer is responsible for ensuring that work can be done in a way that is good for the body. The Provisions emphasise work postures and working movements, manual handling, repetitive work and closely controlled, restricted work.

*There are long shifts, a lot of overtime and a tough schedule. Nearly all loading and unloading involves heavy lifting and twisted postures, often in cold and draughty conditions. The back, knees and shoulders ache the most when work is over.*

DELIVERY MAN,  
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## Heavy physical labour is still common

Heavy manual handling with a lot of lifting and carrying still occurs in for example health care and caring services, transport and warehousing, building and construction, hotels and restaurants, the food industry and cleaning jobs.

It is important to avoid heavy lifting and make use of those aids available.

If manual lifting is unavoidable:

- **hold the load close to your body,**
- **avoid lifting and twisting simultaneously.**

## Your personal experience – is a good early warning system

Your own experience of work is often a good indication of whether a load is good for the body or not. Whilst the body is made for movement and exertion – which is good – people have different capacities to cope with different types of load, depending on individual body size, strength, age and fitness.



## How often and what weight can you lift?

It all depends. The weight of the load to be lifted is only one factor.

Other factors to be taken into account are:

- whether there is enough space for safe lifting,
- the heights to which and from which a load will be lifted or lowered,
- whether the load can be held close to the body,
- whether the body has to twist while lifting,
- how often lifting has to be performed,
- if the grips on the load are comfortable and conveniently positioned.

Each person's own physical capacity makes a difference. In short, every lifting situation has to be judged separately. It is impossible to give exact limit values. A model for the identification and assessment of manual lifting operations is available for guidance, page 13.

**In health care the aim is for no manual lifting of patients to be necessary.** Given sufficient staffing, facilities whose planned capacity is not exceeded and easily accessible technical aids that are properly used, patients can be moved safely without any manual lifting.

## Reduce repetitive work

Repetitive work is all too common. It includes, for example, certain display screen jobs, assembly jobs and manipulative and repetitive jobs at a conveyor belt. It is important that work of this kind is substantially reduced and all occupational categories or industries reduce the number of workers with repetitive work. Repetition of a single movement imposes a constant physical stress. The object handled need hardly weigh anything at all – the weight of the arms can be sufficient to impose a harmful load on muscles and joints, possibly resulting in the gradual onset of injuries from which will take a long time to recover. Once injured in this way, a person can easily suffer a relapse when exposed to similar repetitious practices.

**The rule is that repetitive work and closely controlled and restricted work need not occur.**

If this kind of work cannot be avoided completely, the risks of overloading have to be avoided by means of job variation, job diversification, breaks or other measures. Contrary to popular belief injuries caused by repetitive work cannot be prevented by physical training.



# Five basic rules for good ergonomics

## 1. Holistic view

At work individuals are affected by lots of physical, psychological and social conditions. There is more to ergonomics than standing, sitting and carrying correctly. Ergonomics is also very much a question of how work is planned and organised. It is important to see the whole picture. The design of work in terms of job content, variation, job rotation, working hours and systems of reward have an effect on the body, in both a positive and a negative way. Systematic work environment management within the workplace is a useful tool.

## 2. Do it right from the start

It is always more efficient and less expensive to design the product, the environment and plan the organisation correctly from the beginning, rather than being forced to correct it later. Ergonomic thinking in combination with design, the choice of technical devices, products or facilities is a good investment.

## 3. Find the source of the problem

The design of for example furniture, tools and machines is one of the foundations of ergonomics in order to prevent musculoskeletal disorders. The visual environment is another and we very often adjust our posture because we can't see very well. For example improper glasses and poor lighting conditions are a frequent cause of strained working postures. It is important that poorly designed work products or work stations are not simply compensated by means of reorganisation, by for example job rotation.

## 4. Variation/Recovery

Variation of movements, body posture, loads and job content reduces the risks of physical and mental ill-health. Should work be done standing, sitting down or in some other posture? Variation is the most important thing. Being able to stand up and work occasionally is important for people who spend a lot of their time seated. And a person who has to work in a standing position needs to be able to sit down and work intermittently.

## 5. Give employees scope for action

From an ergonomic point of view job decision latitude means that the individual has the possibility to alternate between different tasks. It also means that the employees have the possibility to choose between sitting and standing at work, to take short breaks when necessary, to modify the pace of work and to get support if needed. It is also important that the employees can influence the choice of work equipment and working methods.

### **The employer should have a systematic work environment management**

This means to plan the work to the work environment and take action against risks before they turn into problems. People must not be injured or harmed, physically or mentally, by their work. When the employer carries out an investigation, risk assessment and plans preventive and control measures, the employees and safety delegates must be given the opportunity to partake. Where relevant, pupils and their safety delegates must also be able to participate. It is very important that the employer know how the individual employees and pupils experience the physical strains of their work.

# Who is responsible for what?

## The responsibilities of the employer

The employer is responsible for the employees having sufficient skills to do their job in a way that does not harm the body. Help and advice on this subject can be obtained from for example various occupational health services. It is important to allow time to practise the technique of using new methods/tools or assistive devices, otherwise they are not likely to be used properly. This stipulation also requires the employer to see to that employees comply with the instructions given.

## The responsibilities of the employee

The Provisions in Ergonomics for the Prevention of Musculoskeletal Disorders, AFS 1998:1, make it the employee's duty to observe the employer's instructions of how to avoid occupational health risks while working. It is the employee's duty to tell the employer if a task is felt to involve harmful practices. A climate conducive to an open dialogue will always provide a sound basis for improving the work environment.

## Manufacturers and importers

A manufacturer, importer or seller of goods and products is also responsible for preventing musculoskeletal disorders. A commodity or product must be possible to use and handle in such a way that health-endangering or unnecessary stress can be avoided. Instructions for use accompanying an article could show the best way of handling a product and thereby making it safe for the human body.

## Developers and planners

During both the construction phase and future use, the party commissioning construction and civil engineering work should/shall plan it in such a way that people can work without being exposed to unnecessary musculoskeletal risks.

## Others with responsibilities

Many people work in places or on premises over which their own employers have no control. This applies, for example, to cleaning staff, delivery vehicle drivers and outsourced office staff. The party in control of a workplace is responsible for that the fixtures and fittings provided do not entail excessive physical strain on workers. This also includes temporary staff that may have a different employer. Those responsible for co-ordination on for example construction sites or large shopping centres are also responsible for providing good ergonomic conditions where different businesses may use the same goods reception.





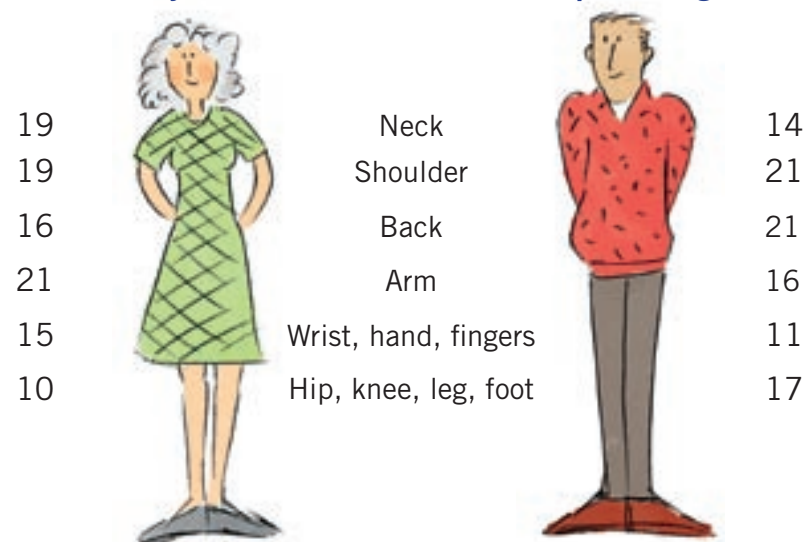
# Musculoskeletal injuries and early retirement

Musculoskeletal injuries at work remain a dominant cause of prolonged sickness absence and early retirement. For many people this means daily pain or aches in muscles and joints. We know, moreover, that musculoskeletal injuries do not go away very easily. The average duration of sickness absence for men and women reported to have suffered musculoskeletal injuries exceeds five months. And today, unfortunately, many people with severe musculoskeletal injuries are excluded from the labour market.

## 19,500 injuries a year

The biggest gain to employers, authorities and individuals would be if the Work Environment Authority were not forced to receive 19,500 new reports of musculoskeletal injuries every year (this figure refers to 2004). These injuries constitute more than a third of all work injuries reported each year.

### Breakdown of musculoskeletal disorders by injured part of body. Men and women in 2004, percentages



## Why aren't musculoskeletal disorders in the workplace diminishing?

Sweden has been a guiding principle to other countries regarding technical development and rationalisation. Sometimes apparently well-thought-out workplaces are created, but if people are occupied with the same tasks over long periods of time, this can give rise to musculoskeletal injuries. The body's own weight can suffice to cause an excessive load, for example if we work in a bent, twisted or stretched posture.

**No job or no workplace design can, from a musculoskeletal point of view, justify for the same task being performed over a long period of time.**

Variation, flexibility, scope for action and recuperation are necessary in all jobs. The body is made for movement and benefits from exertion which is not excessive, one-sided or unduly prolonged.

The trend is for more and more people to be employed doing lighter arm/hand work, often done in sedentary position. The increased use of computers at work and during leisure is one such example. Increasing workload and the pressure of time nowadays impose additional burdens on our muscles in the neck and shoulders.

*I work with a computer and a telephone and I receive a lot of short calls every day. It's hard to leave the workstation for a short period. My neck and shoulders hurt.*

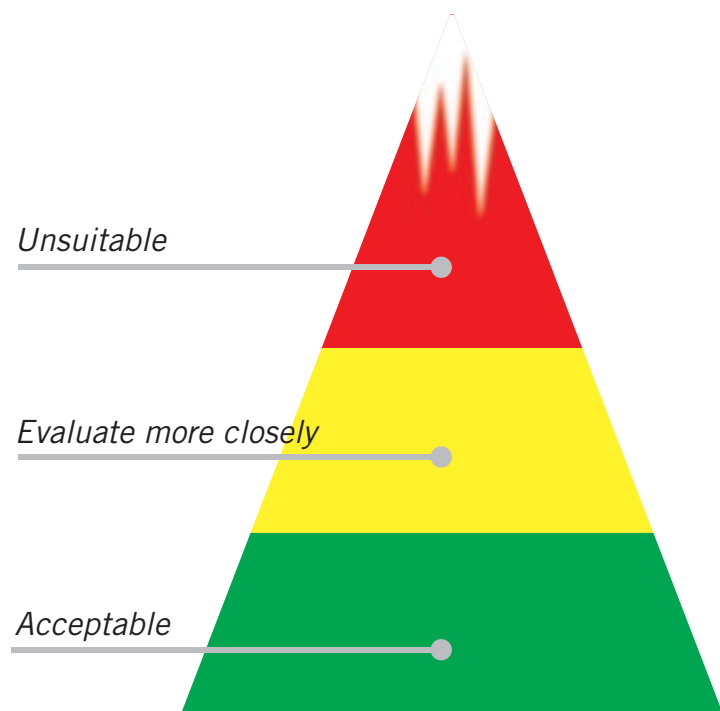
FEMALE  
CALL CENTRE EMPLOYEE,  
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# Take the first step

As an employer you take the first step towards a better work environment when you identify and assess shortcomings and hazards in the workplace. The checklist on page 14 may be of help to you.

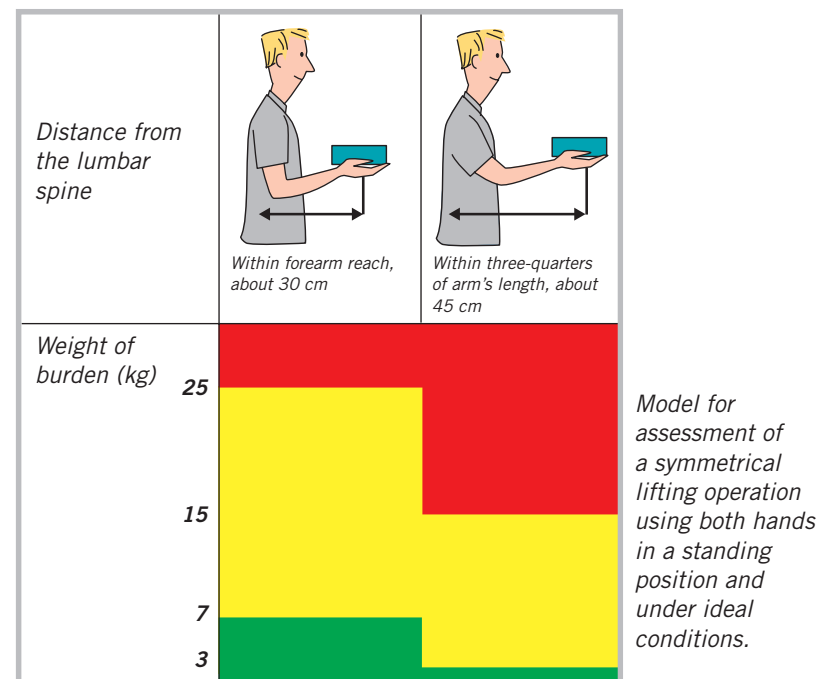
## Assess the risks with models

Guidance on the magnitude of risks is obtainable from the models for different types of work in AFS 1998:1. These are all based on a system of colour zones in which red stands for “unsuitable”, yellow for “evaluate more closely” and green for “acceptable”.



## Model for assessment of lifting work

The following model for the assessment of lifting work concentrates on two main factors: the weight of the load and the distance of its centre of gravity from the body.



## Important influencing factors

The following are the most important of the many factors which should be taken into account in the assessment of risks, especially if the first assessment ends up in a yellow zone: pressure of time, poor grip, different levels, cramped space, the employee’s physical capacity.

The more “aggravating” factors there are, the lower the recommended maximum weight is, compared to a situation where lifting conditions are ideal.

Lifting and moving of living beings requires special thought and consideration.

# CHECKLIST

## – identify the risks

The following checklist is taken from the general recommendations on the implementation of the Provisions on Ergonomics for the Prevention of Musculoskeletal Disorders, AFS 1998:1.

The checklist is a helpful tool in identifying possible risks which can lead to disorders in muscles and joints. When using the checklist it is important to involve the employees and benefit from their experiences.

- 1. Is the floor / walking surface**
  - a. uneven, sloping, slippery or non-resilient?
  - b. are there thresholds, differences in level or other obstructions?
- 2. Are working tools and other equipment unsuitably designed or poorly adjusted from the viewpoint of the employee and the task?**
- 3. Is there insufficient space for working movements and working material?**
- 4. Is the working chair poorly designed or poorly adjusted?**
- 5. In work performed whilst standing, is there no possibility of sitting down to rest?**
- 6. Does the work involve sitting down for a long time?**
- 7. Is the working height poorly adapted to the task and to the employee's body size?**
- 8. Are visual conditions poorly adapted to the visual requirements of the job, thereby leading to strenuous work posture?**
- 9. Is prolonged or recurrent work done with the back:**
  - a. bent forwards, backwards or sideways?
  - b. twisted?
  - c. bent and twisted simultaneously?
- 10. Is the neck repeatedly or for long periods:**
  - a. bent forwards, backwards or sideways?
  - b. twisted?
  - c. bent and twisted simultaneously?
- 11. Is prolonged or recurrent work performed with the arms stretched forward or outwards unsupported or above shoulder height?**
- 12. Is working repeatedly done with the forearm and hand with:**
  - a. twisting movements?
  - b. forceful movements?
  - c. uncomfortable hand positions / grips?
  - d. keys or button sets?
  - e. heavy demands on precision?
- 13. Is fatiguing leg work involved?**
  - a. repeated climbing of a stool, stepladder or suchlike?
  - b. repeated jumping, prolonged crouching or squatting?
  - c. is one leg used more often than the other for support?
  - d. with pedals?
- 14. Is manual lifting involved? Consider such factors as:**
  - a. how often lifting occurs?
  - b. the weight of the load?
  - c. handling beyond forearm's length?
  - d. handling below knee level?
  - e. handling above shoulder height?
  - f. ease or difficulty of grasping the load?
  - g. precision requirement of lifting?
  - h. transfer of persons?

Continuation





15. Is there repeated, prolonged or uncomfortable carrying, pushing or pulling of loads?

16. Is prolonged or recurrent work done:

- a. repeating similar working movements?
- b. Repeating similar working movements beyond comfortable reach? Consider such factors as the weight of work pieces and tools and the ease or difficulty of grasping them.

17. Are technical aids lacking which could make work easier?

**Include these factors as well:**

- Are there time factors, such as the length of the working session, the distribution of rest intervals and breaks, work cycle time etc., which accentuate the impact of any of the risk factors in 1–17?
- Are the possibilities of influencing the arrangement and conduct of one's work too small?
- Is the work done under pressure of time or does it entail negative stress?
- Does the work involve unusual or unexpected situations?
- Is the impact of any of the risk factors in 1–17 accentuated by cold, heat, draughts, noise or suchlike?
- Are negative effects produced by impacts/thrusts, jerks or vibrations?
- Does the employee lack sufficient knowledge of importance in this context?

**Make a summarizing assessment and account for the risk factors according to their severity, then take action.**

## The meaning of Ergonomics covers a broad canvas

Ergonomics is a matter of how work is to be organised and arranged, including job content, job variation, job diversification and working hours. Responsibility for achieving good ergonomics in the work environment rests primarily with the employer, but of course requires widespread participation, by safety delegates, employees, the trade organisations concerned and expert advisers, in order for our work environment to be improved and developed effectively.

***“We work to ensure that as few people as possible will be injured or made ill by their jobs.”***

The Swedish  
Work Environment  
Authority

**Do you want to know more?**

<http://www.av.se/english>

