

# Manual handling at work

## A brief guide



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### Introduction

**This leaflet describes what you, as an employer, may need to do to protect your employees from the risk of injury through manual handling tasks in the workplace. It will also be useful to employees and their representatives.**

**The Manual Handling Operations Regulations 1992, as amended in 2002 ('the Regulations') apply to a wide range of manual handling activities, including lifting, lowering, pushing, pulling or carrying. The load may be either animate, such as a person or an animal, or inanimate, such as a box or a trolley.**

### What's the problem?

Incorrect manual handling is one of the most common causes of injury at work. It causes work-related musculoskeletal disorders (MSDs) which account for over a third of all workplace injuries. (For the latest statistics, visit the HSE web page, [www.hse.gov.uk/statistics/causdis/musculoskeletal/index.htm](http://www.hse.gov.uk/statistics/causdis/musculoskeletal/index.htm).)

Manual handling injuries can happen anywhere people are at work – on farms and building sites, in factories, offices, warehouses, hospitals, banks, laboratories, and while making deliveries. Heavy manual labour, awkward postures, manual materials handling, and previous or existing injury are all risk factors in developing MSDs. There is more information and advice on MSDs on the HSE website, including advice on managing back pain at work.

Taking the action described here will help prevent these injuries and is likely to be cost effective. But you can't prevent all MSDs, so it is still essential to encourage early reporting of symptoms.

### What should I do about it?

**Consider** the risks from manual handling to the health and safety of your employees – this guidance will help you to do this. If there are risks, the Regulations apply.

**Consult and involve** the workforce. Your employees and their representatives know first hand what the risks in the workplace are. They can probably offer practical solutions to controlling them.

The Regulations require employers to:

- **avoid** the need for hazardous manual handling, so far as is reasonably practicable;
- **assess** the risk of injury from any hazardous manual handling that can't be avoided; and
- **reduce** the risk of injury from hazardous manual handling, so far as is reasonably practicable.

These points are explained in detail under 'Avoiding manual handling' and 'Assessing and reducing the risk of injury'.

Employees have duties too. They should:

- follow systems of work in place for their safety;
- use equipment provided for their safety properly;
- cooperate with their employer on health and safety matters;
- inform their employer if they identify hazardous handling activities;
- take care to make sure their activities do not put others at risk.

## **Avoiding manual handling**

### ***Check whether you need to move it at all***

For example:

- Does a large workpiece really need to be moved, or can the activity (eg wrapping or machining) be done safely where the item already is?
- Can raw materials be delivered directly to their point of use?

### ***Consider automation, particularly for new processes***

Think about mechanisation and using handling aids. For example:

- a conveyor;
- a pallet truck;
- an electric or hand-powered hoist;
- a lift truck.

But **beware of new hazards** from automation or mechanisation.

For example:

- automated plant still needs cleaning, maintenance etc;
- lift trucks must be suited to the work and have properly trained operators.

## **Controlling the risks**

As part of managing the health and safety of your business, you must control the risks in your workplace. To do this you need to think about what might cause harm to people and decide whether you are doing enough to prevent harm. This process is known as a risk assessment and it is something you are required by law to carry out.

A risk assessment is about identifying and taking sensible and proportionate measures to control the risks in your workplace, not about creating huge amounts of paperwork. You are probably already taking steps to protect your employees, but your risk assessment will help you decide whether you should be doing more.

Think about how accidents and ill health could happen and concentrate on real risks – those that are most likely and which will cause the most harm. The following might help:

- Think about your workplace activities, processes and the substances used that could injure your employees or harm their health.

- Ask your employees what they think the hazards are, as they may notice things that are not obvious to you and may have some good ideas on how to control the risks.
- Check manufacturers' instructions or data sheets for chemicals and equipment, as they can be very helpful in spelling out the hazards.
- Some workers may have particular requirements, for example new and young workers, migrant workers, new or expectant mothers, people with disabilities, temporary workers, contractors, homeworkers and lone workers may be at particular risk.

Having identified the hazards, you then have to decide how likely it is that harm will occur. Risk is a part of everyday life and you are not expected to eliminate all risks. What you must do is make sure you know about the main risks and the things you need to do to manage them responsibly. Generally, you need to do everything reasonably practicable to protect people from harm.

Make a record of your significant findings – the hazards, how people might be harmed by them and what you have in place to control the risks. Any record produced should be simple and focused on controls. If you have fewer than five employees you do not have to write anything down. But it is useful to do this so you can review it at a later date, for example if something changes. If you have five or more employees, you are required by law to write it down.

Few workplaces stay the same, so it makes sense to review what you are doing regularly.

**Table 1** Making an assessment

<b>Problems to look for when making an assessment</b>	<b>Ways of reducing the risk of injury</b>
<p><i>The tasks, do they involve:</i></p> <ul style="list-style-type: none"> <li>■ holding loads away from the body?</li> <li>■ twisting, stooping or reaching upwards?</li> <li>■ large vertical movement?</li> <li>■ long carrying distances?</li> <li>■ strenuous pushing or pulling?</li> <li>■ repetitive handling?</li> <li>■ insufficient rest or recovery time?</li> <li>■ a work rate imposed by a process?</li> </ul>	<p><i>Can you:</i></p> <ul style="list-style-type: none"> <li>■ use a lifting aid?</li> <li>■ improve workplace layout to improve efficiency?</li> <li>■ reduce the amount of twisting and stooping?</li> <li>■ avoid lifting from floor level or above shoulder height, especially heavy loads?</li> <li>■ reduce carrying distances?</li> <li>■ avoid repetitive handling?</li> <li>■ vary the work, allowing one set of muscles to rest while another is used?</li> <li>■ push rather than pull?</li> </ul>
<p><i>The loads, are they:</i></p> <ul style="list-style-type: none"> <li>■ heavy or bulky?</li> <li>■ difficult to grasp?</li> <li>■ unstable or likely to move unpredictably (like animals)?</li> <li>■ harmful, eg sharp or hot?</li> <li>■ awkwardly stacked?</li> <li>■ too large for the handler to see over?</li> </ul>	<p><i>Can you make the load:</i></p> <ul style="list-style-type: none"> <li>■ lighter or less bulky?</li> <li>■ easier to grasp?</li> <li>■ more stable?</li> <li>■ evenly stacked?</li> </ul> <p>If the load comes in from elsewhere, have you asked the supplier to help, eg by providing handles or smaller packages?</p>

**Table 1** Making an assessment (continued)

<p><b>Problems to look for when making an assessment</b></p>	<p><b>Ways of reducing the risk of injury</b></p>
<p><i>The working environment, are there:</i></p> <ul style="list-style-type: none"> <li>■ restrictions on posture?</li> <li>■ bumpy, obstructed or slippery floors?</li> <li>■ variations in floor levels?</li> <li>■ hot/cold/humid conditions?</li> <li>■ gusts of wind or other strong air movements?</li> <li>■ poor lighting conditions?</li> <li>■ restrictions on movements from clothes or personal protective equipment (PPE)?</li> </ul>	<p><i>Can you:</i></p> <ul style="list-style-type: none"> <li>■ remove obstructions to free movement?</li> <li>■ provide better flooring?</li> <li>■ avoid steps and steep ramps?</li> <li>■ prevent extremes of hot and cold?</li> <li>■ improve lighting?</li> <li>■ provide protective clothing or PPE that is less restrictive?</li> <li>■ ensure your employees' clothing and footwear is suitable for their work?</li> </ul>
<p><i>Individual capacity, does the job:</i></p> <ul style="list-style-type: none"> <li>■ require unusual capability, eg above average strength or agility?</li> <li>■ endanger those with a health problem or learning/physical disability?</li> <li>■ endanger pregnant women?</li> <li>■ call for special information or training?</li> </ul>	<p><i>Can you:</i></p> <ul style="list-style-type: none"> <li>■ pay particular attention to those who have a physical weakness?</li> <li>■ take extra care of pregnant workers?</li> <li>■ give your employees more information, eg about the range of tasks they are likely to face?</li> <li>■ provide more training (see 'What about training?')</li> <li>■ get advice from an occupational health advisor if you need to?</li> </ul>
<p><i>Handling aids and equipment:</i></p> <ul style="list-style-type: none"> <li>■ is the device the correct type for the job?</li> <li>■ is it well maintained?</li> <li>■ are the wheels on the device suited to the floor surface?</li> <li>■ do the wheels run freely?</li> <li>■ is the handle height between the waist and shoulders?</li> <li>■ are the handle grips in good condition and comfortable?</li> <li>■ are there any brakes? If so, do they work?</li> </ul>	<p><i>Can you:</i></p> <ul style="list-style-type: none"> <li>■ adjust the work rate?</li> <li>■ provide equipment that is more suitable for the task?</li> <li>■ carry out planned preventive maintenance to prevent problems?</li> <li>■ change the wheels, tyres and/or flooring so that equipment moves easily?</li> <li>■ provide better handles and handle grips?</li> <li>■ make the brakes easier to use, reliable and effective?</li> </ul>
<p><i>Work organisation factors:</i></p> <ul style="list-style-type: none"> <li>■ is the work repetitive or boring?</li> <li>■ is work machine or system-paced?</li> <li>■ do workers feel the demands of the work are excessive?</li> <li>■ have workers little control of the work and working methods?</li> <li>■ is there poor communication between managers and employees?</li> </ul>	<p><i>Can you:</i></p> <ul style="list-style-type: none"> <li>■ change tasks to reduce the monotony?</li> <li>■ make more use of workers' skills?</li> <li>■ make workloads and deadlines more achievable?</li> <li>■ encourage good communication and teamwork?</li> <li>■ involve workers in decisions?</li> <li>■ provide better training and information?</li> </ul>



### **How far must I reduce the risk?**

To the balancing the level 'reasonably practicable'. This means balancing the level of risk against the measures needed to control the risk in terms of money, time and trouble.

### **Do I have to provide mechanical aids in every case?**

You should definitely provide mechanical aids if it is reasonably practicable to do so and the risks identified in your risk assessment can be reduced or eliminated by this means. But you should consider mechanical aids in other situations as well – they can improve productivity as well as safety. Even something as simple as a sack truck can make a big improvement.

## **What about training?**

Training is important but remember that, on its own, it can't overcome:

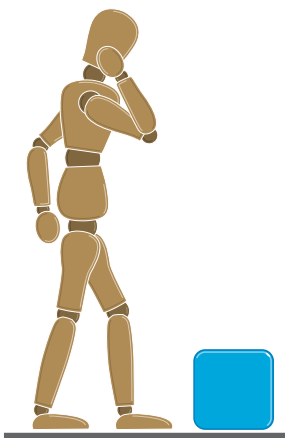
- a lack of mechanical aids;
- unsuitable loads;
- bad working conditions.

Training should cover:

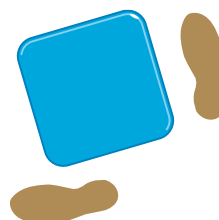
- manual handling risk factors and how injuries can occur;
- how to carry out safe manual handling, including good handling technique (see 'Good handling technique for lifting' and 'Good handling technique for pushing and pulling');
- appropriate systems of work for the individual's tasks and environment;
- use of mechanical aids;
- practical work to allow the trainer to identify and put right anything the trainee is not doing safely.

## **Good handling technique for lifting**

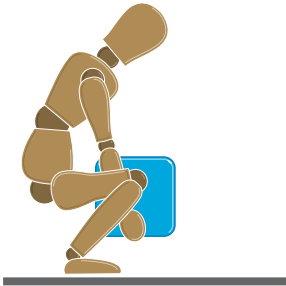
Here are some practical tips, suitable for use in training people in safe manual handling.



**Think before lifting/handling.** Plan the lift. Can handling aids be used? Where is the load going to be placed? Will help be needed with the load? Remove obstructions such as discarded wrapping materials. For a long lift, consider resting the load midway on a table or bench to change grip.



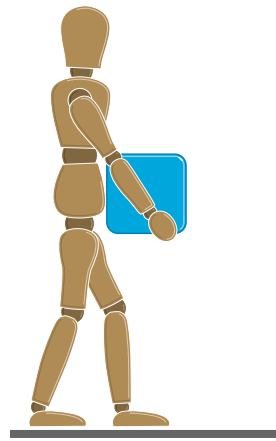
**Adopt a stable position.** The feet should be apart with one leg slightly forward to maintain balance (alongside the load, if it is on the ground). The worker should be prepared to move their feet during the lift to maintain their stability. Avoid tight clothing or unsuitable footwear, which may make this difficult.



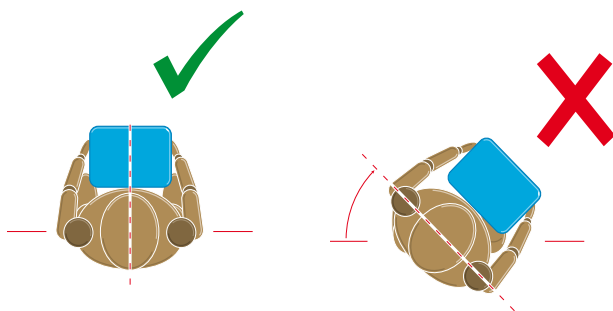
**Get a good hold.** Where possible, the load should be hugged as close as possible to the body. This may be better than gripping it tightly with hands only.

**Start in a good posture.** At the start of the lift, slight bending of the back, hips and knees is preferable to fully flexing the back (stooping) or fully flexing the hips and knees (squatting).

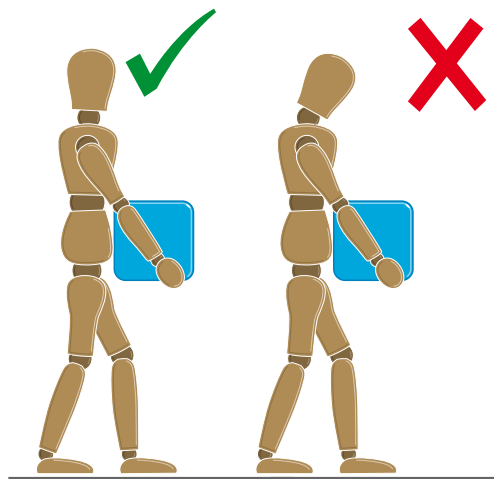
**Don't flex the back any further while lifting.** This can happen if the legs begin to straighten before starting to raise the load.



**Keep the load close to the waist.** Keep the load close to the body for as long as possible while lifting. Keep the heaviest side of the load next to the body. If a close approach to the load is not possible, try to slide it towards the body before attempting to lift it.



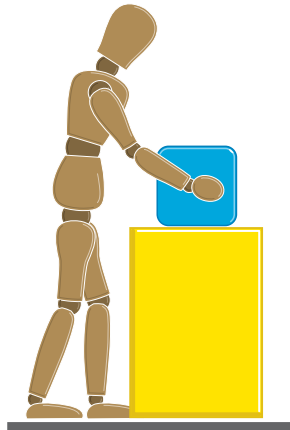
**Avoid twisting the back or leaning sideways,** especially while the back is bent. Shoulders should be kept level and facing in the same direction as the hips. Turning by moving the feet is better than twisting and lifting at the same time.



**Keep the head up when handling.** Look ahead, not down at the load, once it has been held securely.

**Move smoothly.** The load should not be jerked or snatched as this can make it harder to keep control and can increase the risk of injury.

**Don't lift or handle more than can be easily managed.** There is a difference between what people can lift and what they can safely lift. If in doubt, seek advice or get help.



**Put down, then adjust.** If precise positioning of the load is necessary, put it down first, then slide it into the desired position.

## Good handling technique for pushing and pulling

Here are some practical points to remember when loads are pushed or pulled.

**Handling devices.** Aids such as barrows and trolleys should have handle heights that are between the shoulder and waist. Devices should be well maintained with wheels that run smoothly. The law requires that equipment is maintained. When you buy new trolleys etc, make sure they are good quality with large diameter wheels made of suitable material and with castors, bearings etc which will last with minimum maintenance. Consulting your employees and safety representatives will help, as they know what works and what doesn't.

**Force.** As a rough guide the amount of force that needs to be applied to move a load over a flat, level surface using a well-maintained handling aid is at least 2% of the load weight. For example, if the load weight is 400 kg, then the force needed to move the load is 8 kg. The force needed will be larger, perhaps a lot larger, if conditions are not perfect (eg wheels not in the right position or a device that is poorly maintained). The operator should try to push rather than pull when moving a load, provided they can see over it and control steering and stopping.

**Slopes.** Employees should get help from another worker whenever necessary, if they have to negotiate a slope or ramp, as pushing and pulling forces can be very high. For example, if a load of 400 kg is moved up a slope of 1 in 12 (about 5°), the required force is over 30 kg even in ideal conditions – good wheels and a smooth slope. This is above the guideline weight for men and well above the guideline weight for women.

**Uneven surfaces.** Moving an object over soft or uneven surfaces requires higher forces. On an uneven surface, the force needed to start the load moving could increase to 10% of the load weight, although this might be offset to some extent by using larger wheels. Soft ground may be even worse.

**Stance and pace.** To make it easier to push or pull, employees should keep their feet well away from the load and go no faster than walking speed. This will stop them becoming too tired too quickly.

## How do I know if there's a risk of injury?

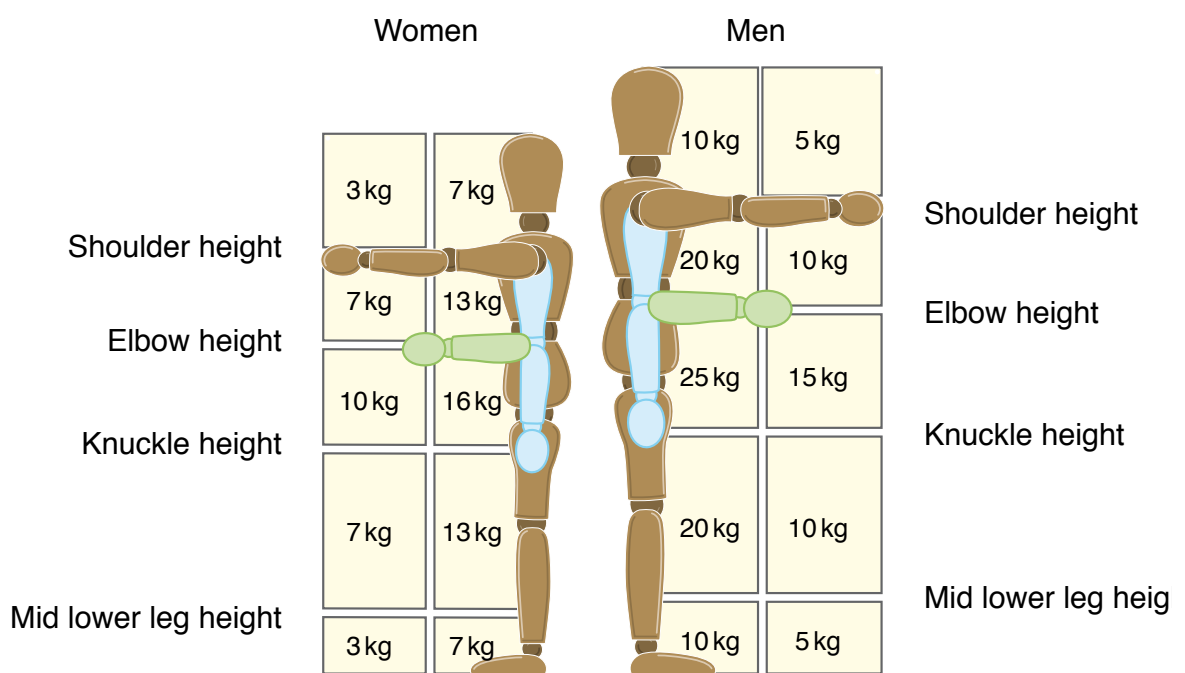
It's a matter of judgement in each case, but there are certain things to look out for, such as people puffing and sweating, excessive fatigue, bad posture, cramped work areas, awkward or heavy loads or people with a history of back trouble. Operators can often highlight which activities are unpopular, difficult or hard work.

It is difficult to be precise – so many factors vary between jobs, workplaces and people. But the general risk assessment guidelines in the next section should help you identify when you need to do a more detailed risk assessment.

## General risk assessment guidelines

There is no such thing as a completely 'safe' manual handling operation. But working within the following guidelines will cut the risk and reduce the need for a more detailed assessment.

- Use Figure 1 to make a quick and easy assessment. Each box contains a guideline weight for lifting and lowering in that zone. (As you can see, the guideline weights are reduced if handling is done with arms extended, or at high or low levels, as that is where injuries are most likely to happen.)
- Observe the work activity you are assessing and compare it to the diagram. First, decide which box or boxes the lifter's hands pass through when moving the load. Then, assess the maximum weight being handled. If it is less than the figure given in the box, the operation is within the guidelines.
- If the lifter's hands enter more than one box during the operation, use the smallest weight. Use an in-between weight if the hands are close to a boundary between boxes.
- The guideline weights assume that the load is readily grasped with both hands and that the operation takes place in reasonable working conditions, with the lifter in a stable body position.



**Figure 1** Lifting and lowering



### **Twisting**

Reduce the guideline weights if the handler twists to the side during the operation. As a rough guide, reduce them by 10% if the handler twists beyond 45°, and by 20% if the handler twists beyond 90°.

### **Frequent lifting and lowering**

The guideline weights are for infrequent operations – up to about 30 operations per hour – where the pace of work is not forced, adequate pauses to rest or use different muscles are possible, and the load is not supported by the handler for any length of time. Reduce the weights if the operation is repeated more often. As a rough guide, reduce the weights by 30% if the operation is repeated once or twice a minute, by 50% if it is repeated 5–8 times a minute, and by 80% where it is repeated more than 12 times a minute.

### **Pushing and pulling**

The task is within the guidelines if the figures in Table 2 are not exceeded:

**Table 2**

	<b>Men</b>	<b>Women</b>
Force to stop or start the load	20 kg	15 kg
Sustained force to keep the load in motion	10 kg	7 kg

See ‘Good handling technique for pushing and pulling’ for some examples of forces required to push or pull loads.

### **Using the results: Do I need to make a more detailed assessment?**

Using Figure 1 is a first step. If it shows the manual handling is within the guideline figures (bearing in mind the reduced limits for twisting and frequent lifts) you do not need to do any more in most cases. But you will need to make a more detailed assessment if:

- the conditions given for using the guidelines (eg that the load can be readily grasped with both hands) are not met;
- the person doing the lifting has reduced capacity, eg through ill health or pregnancy;
- the handling operation must take place with the hands beyond the boxes in the diagram; or
- the guideline figures in the diagram are exceeded.

For pushing and pulling, you should make a more detailed assessment if:

- there are extra risk factors like uneven floors or constricted spaces;
- the worker can’t push or pull the load with their hands between knuckle and shoulder height;
- the load has to be moved for more than about 20 m without a break; or
- the guideline figures in Table 2 are likely to be exceeded.

See the HSE guidance *Manual handling* (see ‘Further reading’) for more advice on how to make a more detailed assessment.

HSE has also developed a tool called the Manual Handling Assessment Chart (MAC), to help you assess the most common risk factors in lifting, carrying and team handling. You may find the MAC useful to help identify high-risk manual handling operations and to help complete detailed risk assessments. It can be downloaded from [www.hse.gov.uk/msd](http://www.hse.gov.uk/msd).

***Does this mean I mustn't exceed the guidelines?***

No. The risk assessment guidelines are not 'safe limits' for lifting. But work outside the guidelines is likely to increase the risk of injury, so you should examine the task closely for possible improvements. You should remember that you must make the work less demanding, if it is reasonably practicable to do so.

Your main duty is to avoid lifting operations that have a risk of injury. Where it is not practicable to do this, assess each lifting operation and reduce the risk of injury to the lowest level reasonably practicable. Look carefully at higher risk operations to make sure they have been properly assessed.

**Further reading**

HSE's website on musculoskeletal disorders: [www.hse.gov.uk/msd](http://www.hse.gov.uk/msd)

*Manual handling. Manual Handling Operations Regulations 1992 (as amended). Guidance on Regulations L23* (Third edition) HSE Books 2004  
ISBN 978 0 7176 2823 0 [www.hse.gov.uk/pubns/books/l23.htm](http://www.hse.gov.uk/pubns/books/l23.htm)

This book gives comprehensive guidance, including:

- the full text of the Manual Handling Operations Regulations 1992 (as amended in 2002) with detailed advice on each regulation;
- guidelines for assessing risk while lifting, carrying, pushing and pulling, and handling while seated;
- practical advice on measures to reduce the risk of injury; and
- an example of an assessment checklist.

*Manual handling: Solutions you can handle* HSG115 HSE Books 1994  
ISBN 978 0 7176 0693 1 [www.hse.gov.uk/pubns/books/hsg115.htm](http://www.hse.gov.uk/pubns/books/hsg115.htm)

*Getting to grips with hoisting people* Health Services Information Sheet HSIS3  
HSE Books 2011 [www.hse.gov.uk/pubns/hsis3.pdf](http://www.hse.gov.uk/pubns/hsis3.pdf)

More guidance on risk assessment can be found at [www.hse.gov.uk/risk](http://www.hse.gov.uk/risk).

**Further information**

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