Manual handling guidance

University of BRISTOL
Safety and Health Services

Contents

Scope

This document outlines the University's responsibilities with regards to manual handling operations. It provides guidance to those responsible for carrying out risk assessment in compliance with the Manual Handling Operations Regulations 1992 (as amended) and provides guidance for compliance with other relevant legislation.

Introduction

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.

Manual handling injuries can happen anywhere people are at work. Risk factors for developing MSDs include:

- heavy work
- awkward postures
- manual materials handling
- previous or existing injury

The back, in particular, is prone to injury caused by incorrect or excessive manual handling, and permanent injuries or chronic and very painful conditions can occur.

Back injuries often result in long term illness and absence, which can place a strain on the injured person, their family, the employer, and workplace in general.

It is therefore in the interests of all that manual handling operations are continually assessed with the objective of removing or significantly reducing the likelihood foreseeable injuries.

Other injuries associated with manual handling should also be considered. These include:

- other musculoskeletal disorders to upper limbs and neck
- fractures
- crush injuries
- cuts and abrasions
- sprains and strains
- hernias

Within a University setting, there are a wide range of manual handling activities including, but not limited to the following:

- lifting and moving office stationery and equipment
- lifting and carrying food and equipment in catering kitchens
- carrying and lifting books in libraries
- movement, lifting and carrying animals in the School of Veterinary Sciences
- movement and setting up of computers, printers, and photocopiers
- lifting and positioning of motors, pipework, construction materials, etc. in maintenance activities
- grounds maintenance activities and movement of equipment
- setting up exhibits and conference stands
- filling and emptying mop buckets during cleaning operations
- lifting and transferring cleaning chemicals and equipment
- receiving and storing goods in stores

Definitions

Manual handling operations:

"Manual handling operations" means any transporting or supporting of a load by hand or by bodily force, including:

- lifting
- putting down
- pushing
- pulling
- carrying
- moving

Load:

A load in this context must be a discrete movable object. This includes, for example:

- packages and boxes
- patients receiving medical attention
- animals during husbandry or undergoing veterinary treatment
- materials supported on a shovel or fork

An implement, tool or machine, such as a chainsaw, hammer or drill, is not considered to be a load when in use for its intended purpose.

Manual handling operations:

The Manual Handling Operations Regulations 1992 (as amended) (MHOR) apply to the manual handling of loads, ie by human effort, as opposed to mechanical handling by crane, lift trucks, etc.

The human effort may be applied directly to the load, or indirectly by hauling on a rope or pulling on a lever. Introducing mechanical assistance, for example a sack truck or a powered hoist, may reduce but not eliminate manual handling since human effort is still required to move, steady or position the load.

Manual handling includes both transporting a load and supporting a load in a static posture. The load may be moved or supported by the hands or any other part of the body, for example the shoulder. Manual handling also includes the intentional dropping of a load and the throwing of a load, whether into a container or from one person to another.

The application of human effort for a purpose other than transporting or supporting a load is not a manual handling operation. For example, turning the starting handle of an engine or lifting a control lever on a machine is not manual handling, nor is the action of pulling on a rope while lashing down cargo on the back of a vehicle.

Responsibilities

Heads of School/Service

It is the responsibility of the Head of School/Service to ensure that all manual handling operations that could result in an injury are assessed and adequately controlled.

The Head of School/Service should also ensure that the manual handling risk assessments and control measures contained therein are outlined and referenced in their local rules document.

Line managers

It is the responsibility of line managers to ensure that:

- any hazardous manual handling operations under their control are avoided, so far as is reasonably practicable
- where such handling operations cannot be avoided, that suitable and sufficient risk assessments are undertaken and control measures implemented to adequately reduce the level of risk, so far as is reasonably practicable
- those undertaking manual handling risk assessments consult the staff carrying out manual handling operations, so that a detailed, accurate and representative assessment of the manual handling operation can be made
- suitable manual handling training is provided for staff members for whom manual handling operations form a significant part of their role. Additionally, adequate supervision, instruction and information regarding manual handling
- operations should be provided to such staff members. For example, the weight of each load / load component; is the load liable to shift during handling; or, where the centre of gravity of a load is etc.
- staff are considered to be suitably fit to undertake manual handling operations, so far as can be reasonably determined
- appropriate time is allocated so that manual handling operations can be undertaken safely
- staff members are aware of, and follow the control measures in place with regard to any manual handling operations within their respective areas, as outlined in relevant risk assessments (see on completing a risk assessment)
- risk assessments are reviewed annually, or if circumstances change. For example, if an injury is sustained during a manual handling operation; a new or expectant mother joins, or is already a staff member; the items being handled change in weight or shape; or the frequency of handling operations changes; etc.
- suitable equipment to alleviate manual handling operations is provided, so far as is reasonably practicable. Equipment, where provided should be suitably inspected and maintained, and staff should be trained in the use of the equipment
- any incidents or accidents relating to manual handling operations are thoroughly investigated, reported through the correct channels and any

remedial actions implemented in a timely manner. A record should be kept of any such incidents and changes to risk assessments, etc

Employees

All employees are responsible for:

- taking reasonable care for their own health and safety and the safety of others who might be affected by their activities
- correctly using any system of work in place for manual handling operations
- avoiding hazardous manual handling operations by use of any appropriate equipment provided for manual handling operations, in accordance with the training and instructions given to them. Such equipment will include machinery and other aids provided for the safe handling of loads
- informing their line manager of any concerns that might reasonably be considered to affect their ability to undertake manual handling operations safely, such as:
    - pregnancy
    - a history of back, knee or hip trouble
    - hernia, etc
- never attempting to manually lift loads which they consider to be too:
    - heavy
    - unwieldy
    - bulky
    - unpredictable
    - unstable
    - or intrinsically harmful to be lifted safely
- informing their line managers of any broken or faulty equipment
- informing line managers of any new activity or equipment that requires risk assessment
- reporting any accident, incident, injury or near-miss immediately to their line manager
- wearing appropriate clothing (that permits good posture, hand and foot grip, etc) and personal protective equipment for the task, or as specified in the risk assessment
- undergoing any suitable training once a need has been identified

Legislative requirements

The following legislation and regulations apply to manual handling operations:

- The Health and Safety at Work etc Act 1974
- The Manual Handling Operations Regulations 1992 (as amended)
- The Management of Health and Safety at Work Regulations 1999
- The Provision and Use of Work Equipment Regulations (PUWER) 1998
- The Lifting Operations and Lifting Equipment Regulations (LOLER) 1998 A brief outline of these legislation and regulations can be found in Appendix 1

Manual handling risk assessment

The Manual Handling Operations Regulations 1992 (as amended) outlines the requirement 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

Assessing a task or activity for manual handling operations

The start point should be to consider if the task or activity involves the manual handling of loads. A general risk assessment should be undertaken to determine this (General risk assessment form – Appendix 2).

Both regular and irregular activities associated with the task or activity should also be taken into account when carrying out the general risk assessment, as these may reveal occasional or sporadic manual handling operations that need to be assessed in more detail, such as by undertaking a more detailed manual handling risk assessment.

Where manual handling operations cannot be avoided, employers have a duty to make a suitable and sufficient assessment of the risk to health (Manual handling of loads – Assessment checklist form – Appendix 3).

The outcome of the risk assessment process should be to reduce risk to an insignificant or low level, so far as is reasonably practicable, by use of suitable control measures. Control measures or alternative methods should be continually refined to achieve this.

The manual handling assessment should take into account a range of relevant factors, that exist or are foreseeable, and of which the manual handling operation might comprise.

These include:

- the tasks
- the loads
- the working environment
- individual capability
- handling aids and equipment
- work organisation factors

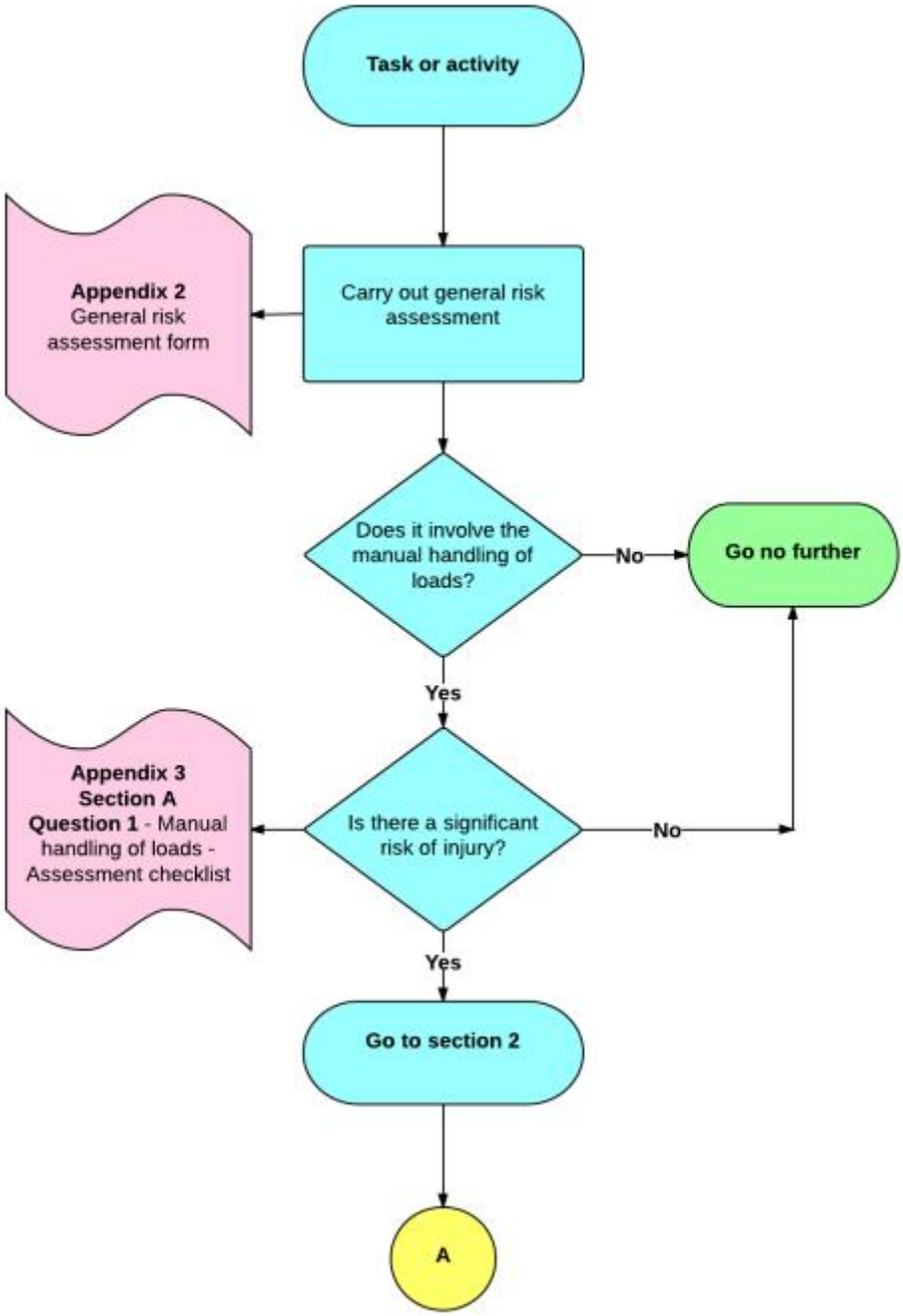
Table 1 below can be used in conjunction with the 'Manual handling of loads – Assessment checklist form' (Appendix 3), when undertaking a manual handling risk assessment.

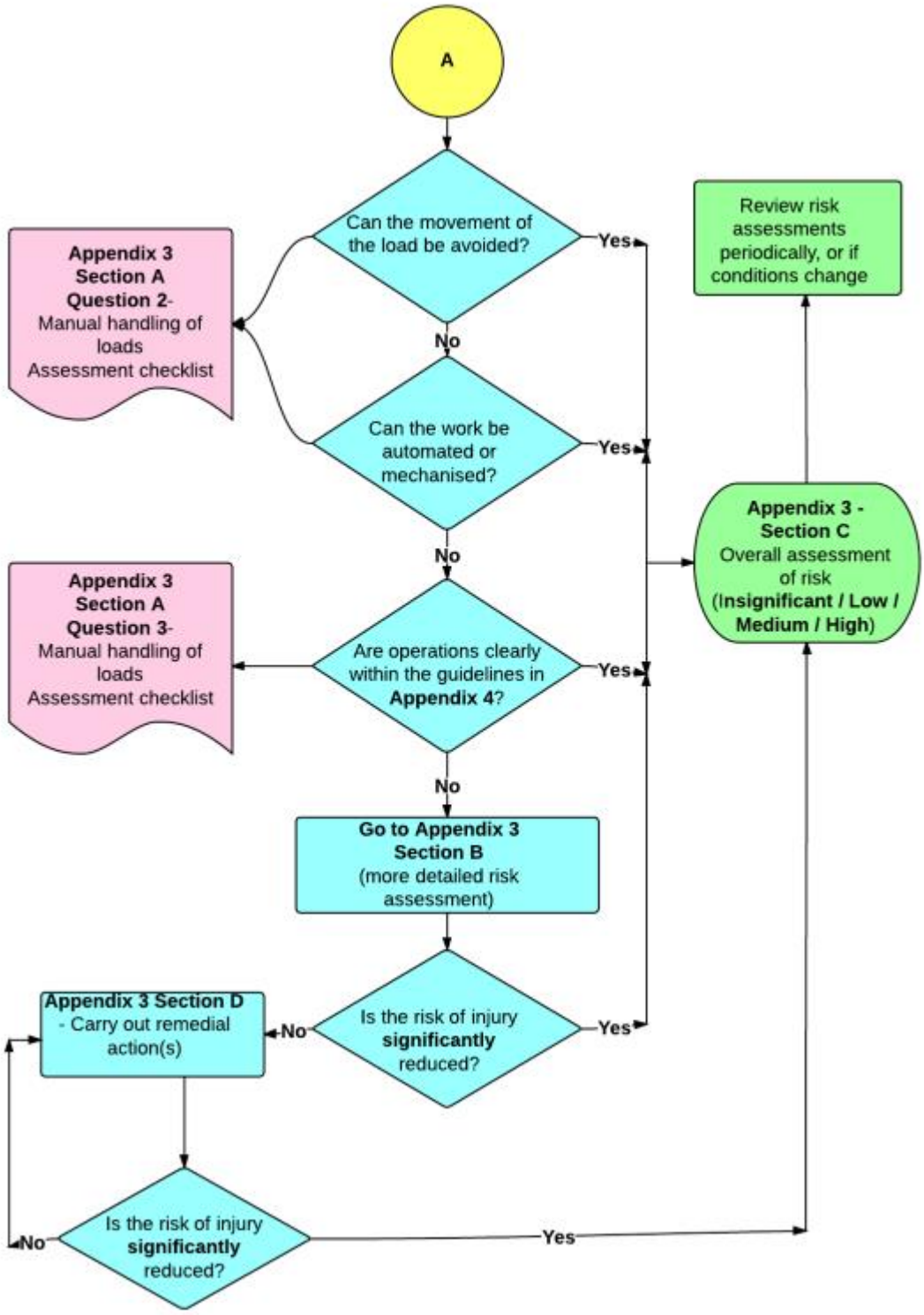
It can be used as an aide-memoire during the risk assessment process and includes examples, for each of the above categories, of problems to look for when making an

assessment, and ways of reducing the risk of injury from manual handling operations.

The manual handling assessment process can be seen below in the manual handling assessment flowchart.

Manual handling assessment flowchart





Step 1 - Identify manual handling operations

A general risk assessment (Appendix 2) of the task or activity should identify if there are any manual handling operations associated with that task or activity. If so, the assessor should use the Manual handling of loads – Assessment checklist form (Appendix 3).

Those involved in the manual handling risk assessment process should consider the hazards and risks involved in any activity or task and decide what can be done to reduce the risks.

Consequently, those carrying out risk assessment require knowledge of the work area and the types of task involved. They should also consult personnel who undertake the tasks, as they are often aware of problems and ways of avoiding them. However, please note that the overall responsibility for suitable and sufficient assessments remains with the line manager.

When carrying out manual handling risk assessment, it is important to take into account both the regular activities that are undertaken, and any irregular activities that may foreseeably occur during manual handling operations.

Regular activities: Personnel are exposed to frequent and/or repetitive (continuous, hourly, daily, weekly or monthly) manual handling hazards, such as:

- deliveries of gas bottles
- food and consumables
- distribution of books
- installation of computers, etc

Irregular activities: These are activities that are carried out infrequently and sometimes at irregular times. Consequently, if not adequately controlled, these activities may present a higher risk of injury. For example, due to:

- insufficient personnel being available
- the activity being subject to a time constraint

Other examples could include:

- a change to an office layout
- a relocation of premises due to fire or flood damage.

Even though the activities may be irregular in frequency the same level of duty applies to reduce the level of risk from any manual handling operation as for a regular occurring activity.

Step 2 - Identify those carrying out manual handling operations

To enable them to carry out manual handling operations safely and effectively, any staff that might be expected to carry out manual handling operations, whether regularly or infrequently, should:

- receive suitable training and instruction
- receive adequate supervision
- use the correct lifting and handling techniques
- use appropriate equipment where necessary and as outlined in the risk assessment for that particular task

This should also extend to staff whose main duty does not include manual handling but who could occasionally be expected to carry and lift certain items.

Individuals have different physical capabilities and characteristics, and these should be taken into account when assessing the task.

Existing or pre-existing physical conditions may affect a person's ability to carry out manual handling tasks and should be taken into account.

Similar consideration should also be given to changes in the capabilities of individuals. For example:

- a new or expectant mother
- a person recuperating from a recent surgical operation
- anyone suffering from a recent back injury or MSD
- a new health condition that could affect a person's ability to lift safely

Step 3 - Evaluate risk from manual handling operations

Evaluate the level of risk from the manual handling operation(s), and if any controls are in place to reduce the level of risk, decide whether these are adequate or if more should be done. For example, by carrying out a more detailed risk (manual handling) assessment.

Risk of injury can be reduced by consideration of the following hierarchy of control options such as:

- eliminating the need for handling at source, such as delivery of goods by supplier to point of use
- exploring whether the task be automated or mechanised, such as:
    - bulk delivery of gas which is then piped to the point of use from a central storage tank, thus avoiding the manual handling of gas cylinders
    - the use of pallet trucks, sack trucks and trollies to transfer loads rather than carrying them
- re-arranging the workplace, such as:
    - storing heavier items at waist height
    - storing more commonly used items near to point of use
    - purchasing smaller unit sizes if possible
- providing training, instruction and supervision to staff in moving and handling techniques so that they are able to carry out manual handling operations more safely and identify any hazards that might arise.

Step 4 - Implement the results of the evaluation

Following the evaluation, if any remedial actions are required, the following points should be implemented:

1. Remedial steps should be listed in order of priority (see Appendix 3, section D).
2. A responsible person with the appropriate authority to be allocated to implement any controls.
3. A target date to be set for implementation of those controls.
4. An indication of whether or not the controls have been completed.

5. Employees to be informed of the results, procedures to be followed and the supervisory requirements (if any).
6. Effectiveness of the change(s) to be monitored. It may be necessary to review and revise any changes as necessary if circumstances change.

Step 5 - Record the results of the manual handling risk assessment

All significant findings from the risk assessment must be recorded. The risk assessment form should include the following details:

- name and details of the person carrying out the assessment
- the significant findings of the assessment
- any recommended remedial actions
- the person responsible for carrying out the recommended remedial actions
- the date of the assessment and the review date

Table 1 – Typical manual handling problems and ways of reducing the risk of injury from manual handling

Tasks

Problems to look for when assessing	Ways of reducing the risk of injury
Do **tasks** involve: • holding loads away from the body? • twisting, stooping or reaching upwards? • large vertical movement? • Carrying over long distances? • strenuous pushing or pulling? • repetitive handling? • insufficient rest or recovery time? • a work rate imposed by a process?	Can you **reduce risk** by: • using a lifting aid? • improving workplace lay out to improve efficiency? • reducing the amount of twisting and stooping? • avoiding lifting from floor level or above shoulder height, especially heavy loads? • reducing carrying distances? • avoiding repetitive handling? • varying the work, allowing one set of muscles to rest while another is used? • pushing rather than pulling?

Loads

Problems to look for when assessing	Ways of reducing the risk of injury
Are **loads**: • heavy or bulky? • difficult to grasp? • unstable or likely to move unpredictably (like animals)? • harmful, eg hot or sharp? • awkwardly stacked? • too large for the handler to see over?	Can you **make the load**: • lighter or less bulky? • easier to grasp? • more stable? • evenly stacked? If the load comes from elsewhere, have you asked the supplier to help? For example, by providing handles or smaller packages.

Working environment

Problems to look for when assessing	Ways of reducing the risk of injury
Does the **working environment** present: • restrictions on posture? • bumpy, obstructed or slippery floors? • variations in floor levels? • hot, cold or humid conditions? • gusts of wind or other strong air movements? • poor lighting conditions? • restrictions on movement from clothes or personal protective equipment (PPE)?	Can you **reduce risk** by: • removing obstructions to free movement? • providing better flooring • avoiding steps to steep ramps? • preventing extremes of hot or cold? • improving lighting • providing personal protective equipment (PPE) that is less restrictive? • ensuring that employees' clothing and footwear is suitable for their work?

Individual capacity

Problems to look for when assessing	Ways of reducing the risk of injury
Does the **job**: • require unusual capability, such as above average strength or agility? • endanger those with a health problem or learning or physical disability? • endanger pregnant women? • call for special information or training?	Can you **reduce risk** by: • paying particular attention to those who have a physical weakness? • taking extra care of pregnant workers? • giving employees more information, for example about the range of tasks they are likely to face? • providing more training? • getting advice from the Occupational Health Service regarding individual concerns if you need to?

Handling aids and equipment

Problems to look for when assessing	Ways of reducing the risk of injury
Does/is the **device or equipment**: • the correct type for the job? • well maintained? • have wheels that are suited to the floor surface? • have wheels run freely? • have a handle height between the waist and shoulders? • have handle grips in good condition and comfortable? • have any brakes, and if so, do they work?	Can you **reduce risk** by: • adjusting the work rate? • providing equipment that is more suitable for the task? • carrying out planned preventative maintenance to prevent problems? • changing the wheels, tyres and/or flooring so that equipment moves easily? • providing better handles and handle grips? • making the brakes easier to use, reliable and effective?

Work organisation factors

Problems to look for when assessing	Ways of reducing the risk of injury
Does the **work** involve: • tasks that are repetitive or boring? • machine- or system-paced tasks? • demands on workers that feel excessive? • little control for workers in choice of tasks and working methods? • poor communication between managers and employees?	Can you **reduce risk** by: • changing tasks to reduce the monotony? • making more use of workers' skills? • making workloads and deadlines more achievable? • encouraging good communications and teamwork? • involving workers in decisions? • providing better training and information?

Appendix 1 – relevant legislation / regulations

The Health and Safety at Work etc Act 1974 requires employers, under 'General duties of employers to their employees (amongst other things) to: '… ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees'.

This includes: '… the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health; arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances.'

Related regulations and guidance:

- The Manual Handling Operations Regulations 1992 (as amended)
- Manual Handling at Work – A brief guide (INDG 143 rev2)
- Manual Handling (L23) – Manual Handling Operations Regulations 1992 (as amended) – Guidance on Regulations

The Management of Health and Safety at Work Regulations 1999 requires that: '…Every employer shall make a suitable and sufficient assessment of – (a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and (b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking'

Guidance on how to undertake risk assessment is detailed in the University's Risk assessment guidance.

The Provision and Use of Work Equipment Regulations 1998 (PUWER) generally covers any equipment used by an employee at work, and in the case of equipment used to avoid or alleviate manual handling operations, could include sack trucks, wheelbarrows, trolleys, step ladders or step stools, hoists, slings and lifts, etc.

PUWER ("the regulations") places duties on any person who uses, supervises, manages or has any control of equipment used for work purposes. The regulations state that every employer shall ensure that work equipment is so constructed or adapted as to be suitable for the purpose for which it is used or provided.

Every employer shall ensure that work equipment is used only for operations for which, and under conditions for which, it is suitable. The regulations require that work equipment is maintained in an efficient state, in efficient working order and in good repair and any maintenance carried out is recorded. The regulations also require suitable inspections at regular intervals if machinery is likely to suffer from deterioration or if work equipment depends on the installation conditions.

This is a basic outline of some of the duties included in the regulations and further guidance can be obtained from the Health and Safety Executive (HSE) Approved Code of Practice and Guidance (L22) – Safe Use of Work Equipment – Provision and Use of Work Equipment Regulations 1998.

The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) places duties on any person who uses, supervises or manages or has any control of equipment used for lifting or lowering loads at work (objects, persons or animals).

LOLER ("the regulations" state that lifting equipment must be positioned and installed so as to be safe. It must be of adequate strength and stability and clearly marked with its safe working load (SWL). In addition, any load parts or attachments

used in the lifting operation must be of adequate strength and marked with any information necessary to ensure their safe use. The regulations require that all lifting operations must be properly planned by a competent person, be appropriately supervised and carried out in a safe manner.

Furthermore, where appropriate, before lifting equipment (including accessories – shackles, slings, etc) is used for the first time, it is thoroughly examined. Lifting equipment may need to be thoroughly examined in use at periods specified in the regulations (depending on use and load type) or at intervals laid down in an examination scheme drawn up by a competent person. All examination work should be performed by a competent person (someone with the necessary skills, knowledge and experience).

Following a thorough examination or inspection of any lifting equipment, a report is submitted by the competent person to the employer to take the appropriate action.

For further details and information see the HSE Approved Code of Practice and guidance, L113 – Safe Use of Lifting Equipment: Lifting Operations and Lifting Equipment Regulations 1998.

Appendix 2 – General risk assessment form

University of BRISTOL Safety and Health Services	**University of Bristol** **General risk assessment form**			
Date:	**Assessed by:**	**Checked by:**	**Assessment ref no:**	**Review date:**

Description and location of hazard	**Who might be harmed**	**Existing control measures**	A. **Likely severity of injury (1 to 3)**	B. **Likely Occurrence (1 to 3)**	**Risk Rating (A) x (B)**	**Comments / actions**

Score	**3**	**2**	**1**
Column A: Severity of injury:	Major Injury or death	Injury requiring medical treatment	Minor or no injury
Column B: Likely occurrence:	Regular exposure of several employees to hazard.	Occasional exposure of few employees.	Exposure to hazard very rare.

Risk Score	Response Times	Risk Score	Response Times
9	Immediate cessation of activity until interim controls are agreed and implemented	**3&4**	Review on change of process or if circumstances change. Provide additional training, supervision and monitoring.
6	Critically examine the areas of exposure in the process and agree timetable for completion of all agreed actions	**<3**	12 months review (date of next audit). No real changes in procedure required to reduce risk further

Action Plan				
Ref No.	**Further action required**	**By whom**	**By when**	**Completed**

10. Appendix 3 - Manual handling of loads - Assessment checklist

Manual handling of loads Assessment checklist	
Summary of assessment:	
Operations covered by this assessment:	
Overall priority for remedial action:	Nil / Low / Med / High *
Remedial action to be taken:	
Locations:	
Personnel involved:	
Date of assessment:	
Date by which action is to be taken:	
Date for reassessment:	
Section A – Preliminary	
Do the operations involve a significant risk of injury?	Y/N
• If **Yes,** go to Q2. • If **No,** the assessment does not need to go further (make a record of this). • If in doubt, answer **Yes.** • Further guidance can be found in Appendix 4 (Lifting and handling guidelines).	
Can the operations be: • avoided • mechanized • automated at reasonable cost?	Y/N
• If **No,** go to Q3. • If **Yes,** proceed and then check that the result is satisfactory.	
Are the operations clearly within the guidelines in Appendix 4?	Y/N

- If **No,** go to Section B.
- If **Yes,** you may go straight to Section C if you wish.

Section C – Overall assessment of risk

What is your overall assessment of the risk of injury?	Insignificant / Low / Med / High

- If *not* **Insignificant,** go to Section D.
- If **Insignificant,** the assessment does not need to go further.

Section D – Remedial action

What remedial actions should be taken, in order of priority?	

- □ Complete the **summary** above.
- □ Compare it with your other manual handling assessments.
- □ Decide your priorities for action.

Take action and check that risk(s) is adequately controlled.

Section B – More detailed assessment

Questions to consider	**Yes, No, N/A** *If yes, indicate the appropriate level of risk*			**Possible remedial action** *Make rough notes in this column in preparation for completing Section D – Remedial action list*
Do the tasks involve:	**Low**	**Med**	**High**	
Holding loads away from the trunk				
Twisting				
Stooping				
Reaching upwards				
Large vertical movements				
Long carrying distances				
Strenuous pushing or pulling				
Unpredictable movement of loads				

Repetitive handling				
Insufficient rest or recovery				
A work rate imposed by a process				
Are the loads:				
Heavy				
Bulky or unwieldy				
Difficult to grasp				
Unstable or unpredictable				
Intrinsically harmful, eg sharp or hot				
In the working environment, are there:				
Constraints on posture				
Poor floors				
Variations in levels				
Hot, cold, or humid conditions				
Strong air movements				
Poor lighting conditions				
For the individual capability, does the job:				
Require unusual capability				
Pose a risk to those with a health problem or a physical or learning difficulty				
Pose a risk to those who are pregnant				
Call for special information or training				
Other factors to consider				

Protective clothing:				
Is movement or posture hindered by clothing or personal protective equipment?				
Is there an absence of the correct and suitable PPE being worn?				
Work organisation and psychological factors:				
Do workers feel that there has been a lack of consideration given to the planning and scheduling of tasks and rest breaks?				
Do workers feel that there is poor communication between managers and employees, eg not involved in risk assessments or decisions or changes in workstation design?				
Are there sudden changes in workload, or seasonal changes in volume without mechanisms for dealing with the change?				
Do workers feel they have enough training and information to carry out the task successfully?				
The guidelines in Appendix 4 can be used in assessing the level of risk in a handling operation. **When you have completed Section B, go to Section C.**				

Section D – Remedial action list

	Remedial steps to be taken, in order of priority (high – med – low)	**Person responsible for implementing controls**	**Target implementation date**	**Completed Y/N**
1				
2				
3				

4				
5				
6				
7				
8				
9				
Date by which actions should be completed:				
Date for review of assessment:				
Assessor's name:		**Signature:**		

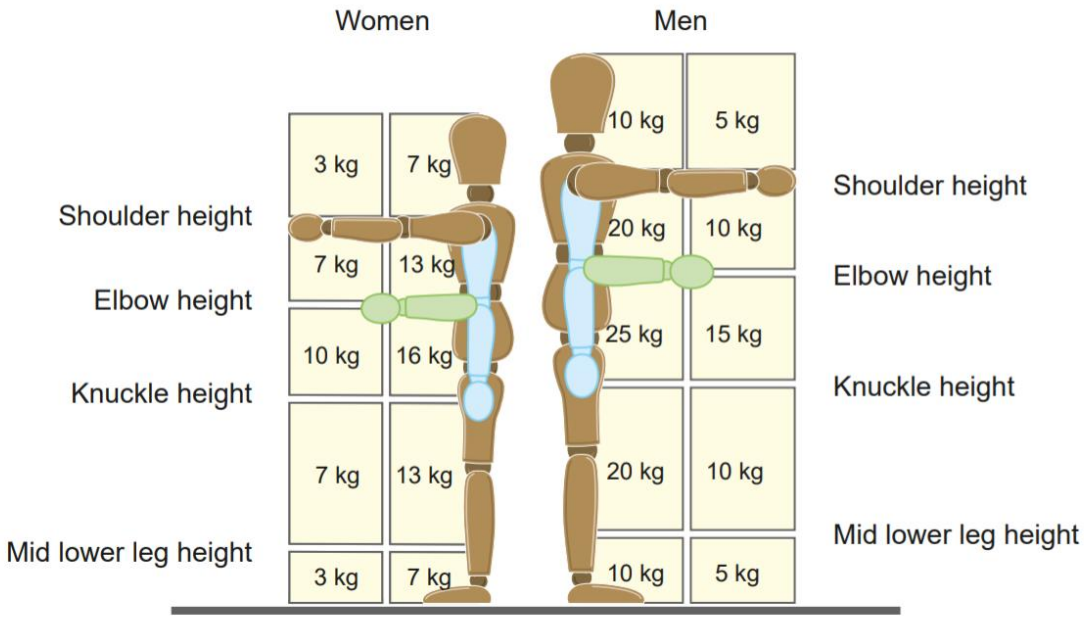
Appendix 4 – Lifting and handling guidelines

Source: L23, Manual Handling, Guidance on regulations (HSE Books)

These guidelines are intended to aid the assessor in deciding upon the level of detail that should be included in the risk assessment and they illustrate the effect of twisting, stooping, lowering, pushing and pulling etc. on the ability of a person(s) to perform manual handling operations safely.

Table 2 (below) can be used as a checklist to indicate whether or not the manual handling operations fall outside the guidelines. If guideline assumptions are not met, this clearly indicates that there could be a significant risk of injury from the manual handling operation and that there is a requirement for a detailed assessment and adequate control measures to mitigate risks.

The guidelines should be used in conjunction with the 'Manual handling of loads – Assessment checklist form' (Appendix 3).



Lifting / handling guidelines

Each box in the diagram contains a guideline weight for lifting and lowering in that zone. Using the diagram enables the assessor to take into account the vertical and horizontal position of the hands as they move the load, the height of the individual handler and the reach of the individual handler. As can be seen from the diagram, 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.

Observe the work activity being assessed 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, then the smallest weight figure applies. An intermediate weight can be chosen if the hands are close to a boundary between boxes.

The guideline figures for lifting and lowering assume:

- The load is easy to grasp with both hands.
- The operation takes place in reasonable working conditions.
- The handler is in a stable body position.

Application of the guidelines will provide a reasonable level of protection to around 95% of working men and women. However, the guidelines should not be regarded as safe weight limits for lifting.

There is no threshold below which manual handling operations may be regarded as 'safe'. Even operations lying within the boundary mapped out by the guidelines should be avoided or made less demanding wherever it is reasonably practicable to do so.

Frequent lifting and lowering

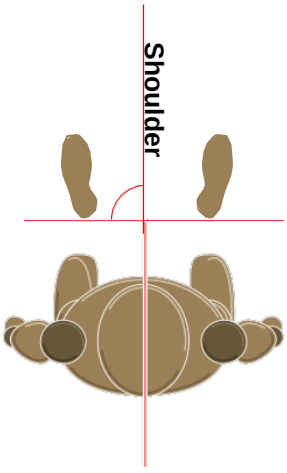
The basic guideline figures for lifting and lowering are for relatively infrequent operations – up to approximately 30 operations per hour or one lift every two minutes. The guideline figures will have to be reduced if the operation is repeated more often. As a rough guide:

Where operations are repeated	Figures should be reduced by
Once or twice per minute	30%
Five to eight times per minute	50%
More than 12 times per minute	80%

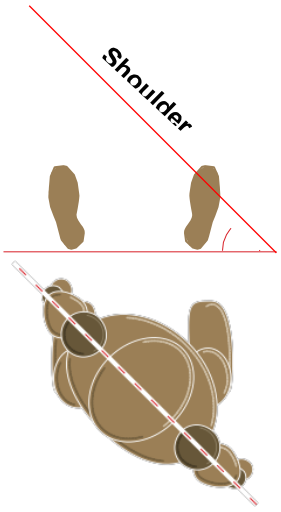
Even if the above conditions are satisfied, a more detailed risk assessment should be made where:

a) the worker does not control the pace of work
b) pauses for rest are inadequate or there is no change of activity which provides an opportunity to use different muscles, or
c) the handler must support the load for any length of time

Twisting



90˚ twist



45˚ twist

Assessing twist

In many cases, manual handling operations will involve some twisting, such as moving the upper body while keeping the feet static. The combination of twisting and lifting and twisting, stooping and lifting are particularly stressful on the back. Therefore, where the handling involves twisting and turning then a detailed assessment should normally be made.

However, if the operation is:

a) relatively infrequent (up to approximately 30 operations per hour or one lift every two minutes), and
b) there are no other posture problems,

then the guideline figures in the relevant part of this filter can be used, but with a suitable reduction according to the amount the handler twists to the side during the operation. As a rough guide:

If handler twists through (from front)	**Guideline figures should be reduced by:**
45º	10%
90º	20%

Where the handling involves turning, such as moving in another direction as the lift is in progress and twisting, then a detailed assessment should normally be made.

Guidelines for carrying

The guideline figures for lifting and lowering apply to carrying operations where the load is:

a) held against the body
b) carried no further than about 10 m without resting

Where the load can be carried securely on the shoulder without first having to be lifted (as, for example when unloading sacks from a lorry) the guideline figures can be applied to carrying distances in excess of 10m.

A more detailed assessment should be made for all carrying operations if:

a) the load is carried over a longer distance without resting, or
b) the hands are below knuckle height or above elbow height (due to static loading on arm muscles)

Guidelines for pushing and pulling

For pushing and pulling operations, whether the load is slid, rolled or supported on wheels, the guideline figures assume the force is applied with the hands, between knuckle and shoulder height. It is also assumed that the distance involved is no more than about 20m. If these assumptions are not met, a more detailed risk assessment is required.

	Men	**Women**
Guideline figure for stopping or starting a load	20kg (about 200 N)	15kg (about 150 N)
Guideline figure for keeping the load in motion	10kg (about 100 N)	7kg (about 70 N)

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.

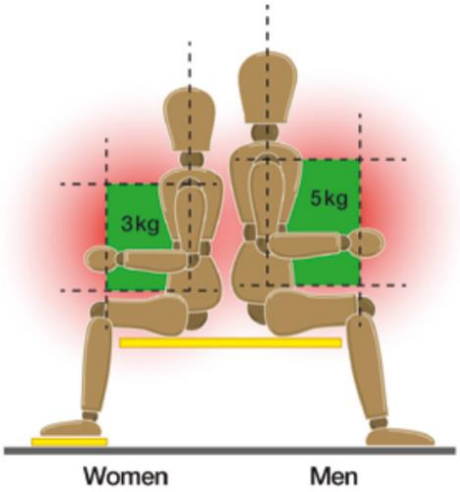
For example, if the load weight is 400kg, then the force needed to move the load is 8kg. The force needed will be larger, perhaps a lot larger, if conditions are not perfect, for example if the wheels are not in right position or if a device is poorly maintained.

Moving an object over soft or uneven surfaces also 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.

Pushing and pulling forces will also be increased if workers have to negotiate a slope or ramp. Even where the guidelines in the table above are met, a detailed risk assessment will be necessary if risk factors such as uneven floors, confined spaces, or trapping hazards are present.

There is no specific limit to the distance over which a load is pushed or pulled as long as there are adequate opportunities for rest or recovery.

Guidelines for handling while seated



Handling while seated

The basic guideline figures for handling operations carried out while seated are:

Men	Women
5 kg	3 kg

These guidelines only apply when the hands are within the box zone indicated. If handling beyond the box zone is unavoidable, a more detailed assessment should be made.

Table 2 – Application of guidelines checklist

Task:			
Activity	For each activity, does the task fall outside the guidelines?	Are there any other considerations which indicate a problem, and if so, what is the problem?	Is a more detailed risk assessment required?
Lifting and lowering	Y/N	Y/N	Y/N
Carrying	Y/N	Y/N	Y/N
Pushing and pulling	Y/N	Y/N	Y/N
Handling while seated	Y/N	Y/N	Y/N