Inanimate Object

Learner's Workbook

Name
Worksetting
Course date
Trainer

This workbook will remind you of the knowledge and skills covered during the HME training you have attended. Your course may not have covered all the topics contained in the workbook since training is customised to the needs of different work settings.

HME learning outcomes are compatible with the Qualification and Credit Framework (QCF) **Level 2 Certificate in Assisting and Moving Individuals,** the All Wales Manual Handling Training Passport and Information Scheme and the DIAG Code of Practice. If you are registered for the QCF you can use the workbook as evidence of learning towards gaining the qualification since it covers the four mandatory units indicated below:

QCF Level 2 Certificate in Assisting and Moving Individuals in Social Care Settings
MH 203 Understanding & enabling assisting & moving individuals
MH 204 Select and use appropriate techniques and equipment when dealing with falls
MH 205 Select and use appropriate strategies and equipment when assisting and moving individuals
MH206 Moving inanimate loads

Please note that in order to gain the QCF qualification you must be registered with an appropriate centre and supported by a suitably qualified QCF assessor who will assist you to plan your guided learning hours and optional units.

The workbook incorporates:

- Information and guidance related to manual handling of inanimate loads, postural awareness and assisting and moving individuals
- Guidelines for safe handling
- Activities linked to QCF learning outcomes
- A learning record with space for your trainer to sign when you have completed modules and for a QCF assessor to sign if appropriate

The workbook has been designed to help you get as much as possible from your training. As well as information sheets it contains quizzes and activities for you to complete. Please write as clearly as possible and check with the trainer or your manager/supervisor if you are unsure of anything. If you have literacy or numeracy difficulties please discuss these with the trainer or your manager who will make arrangements for you to have the necessary support.

This should not be used as an instruction book by those who have not attended our training since the necessary skills cannot be acquired solely from written guidance.

It is important to remember that all handling activities that involve risk of injury should be assessed in line with the Manual Handling Operations Regulations 1992 (as amended). The guidance on practical applications in this workbook must be used in this way.

Section 1 – Moving Inanimate Loads

Relates to:

- **QCF MH206, elements of MH203**
- **All Wales Manual Handling Passport Modules A & B**

Contents:

Definitions

Manual Handling

The Manual Handling Operations Regulations 1992 (as amended) define **manual handling** as the *"transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving thereof) by hand or by bodily force"*.

Load:

A **load** is a discrete movable object. This may be inanimate (an object) or animate (a person or an animal).

Hazard

A **hazard** is something that might cause harm

Risk

A **risk** is the chance, great or small, of a person being harmed by a hazard

Back pain and injury

Back pain affects most of us

- In industrialised countries up to 80% of the population will experience back pain at some stage in their life. During any one year up to half of the adult population (15%-49%) will have back pain.
- The number of people with back pain increases with advancing age, starting with school children and peaking in adults of 35 to 55 years of age.

How long does it last?

- 90% of people with acute back pain will recover within 6 weeks.
- Up to 7% of people with acute back pain will develop chronic back pain. Chronic patients have considerable discomfort and account for approximately 80% of social and health care costs.

Back pain is very expensive

- The National Health Service spends more than £1 billion per year on back pain related costs, this includes:
  - £512 million on hospital costs for back pain patients
  - £141 million on GP consultations for back pain
  - £151 million on physiotherapy treatments for back pain
- Total cost to the economy is estimated to be £12 billion per year
- Public sector cost estimated at £4 billion per year
- Back pain is the second greatest reason for long term sickness in the UK. In manual labour jobs back pain is the number one reason.
- People suffering a work related musculoskeletal disorder take 17 days off work per year on average

Manual handling accidents

RIDDOR reported injuries 2013/14 showed:

- an estimated 909 000 working days were lost due to handling injuries
- an average of 6.6 days were lost for each handling injury
- handling caused nearly a quarter of reported injuries (24%)

Nurses and carers

- Health & social care had the highest number of RIDDOR reported handling injuries in 2013/14p (3 770).
- 3,600 nurses end their careers each year as a result of these injuries
- Highest compensation awarded to a back injured nurse is £803,000

Low back pain in children

Studies across Europe show that back pain is very common in children with around 50% experiencing back pain at some time, although a recent study from France recorded four out of five children having back pain in the last year. In that study the weight of their school bags was one of the strongest predictors.

References:

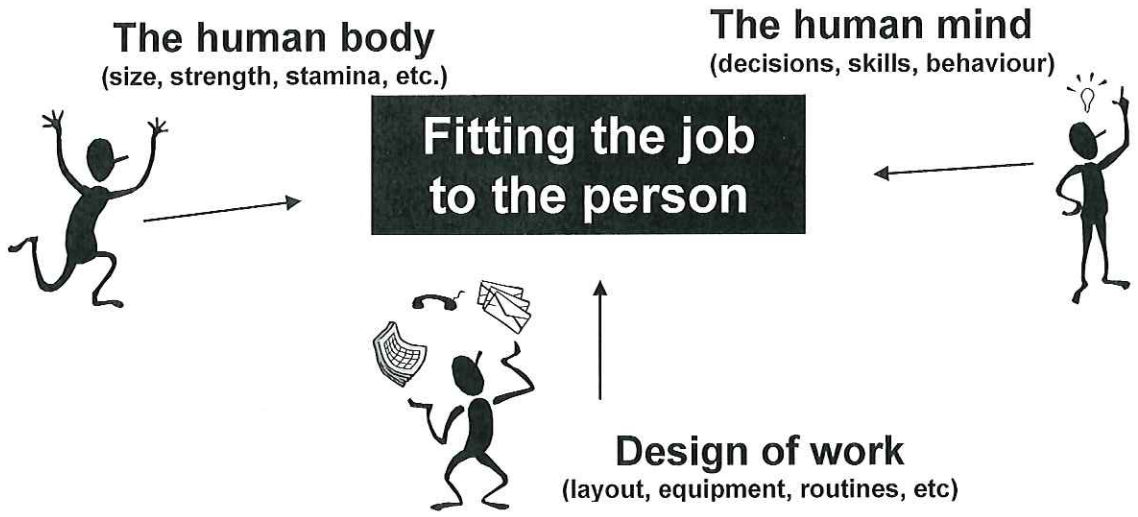
- www.backcare.org.uk
- www.hse.gov.uk – (Musculoskeletal Disorders in Great Britain 2014)
- www.hse.gov.uk – (Backpain in the Workplace)
- www.hse.gov.uk – (Working Days Lost)

Ergonomic approach

Ergonomics is the scientific study of the relationship between people and their work (see Fig: 1). The reason for using an ergonomic approach is to try to fit work to the physical characteristics and limitations of employees, rather than to force workers to adapt to jobs that can, over time, affect their well-being. An effective match between a worker and their job provides improved levels of:

- Work efficiency (performance, productivity, etc.)
- Health and safety
- Job satisfaction

Fig: 1 Ergonomics



The Manual Handling Operations Regulations 1992 (as amended) require an ergonomic approach to be used to remove or reduce the risk of injury. This approach looks at manual handling as a whole and takes into account a range of factors which are usually grouped under five key headings:

1. **Task** (the postures and movements used by the handler)
2. **Individual capability** (the handler's physical characteristics and skills)
3. **Load** (the characteristics of the object or person to be moved)
4. **Environment** (the place where the activity takes place)
5. **Other Factors** (protective clothing, work organisation, equipment)

The acronym **TILEO** is often used as a reminder of these key factors. Each of the factors may influence the others and therefore none should be considered on their own.

Examples of ergonomic changes include:

- The provision of equipment to eliminate or reduce handling, e.g. a hoist or sack truck
- Changing the layout of the workplace to eliminate/reduce postural stress, e.g. rearranging a bedroom to allow access to both sides of a bed, creating more space at better levels in a storage area
- Reorganisation of work, e.g. rotation of staff to vary activities and balance workloads

Risk assessment

Risk assessments are simply a formal method for weighing up a situation to ensure safety. We all make risk assessments regularly e.g. to cross the road. If you think about it you will probably be surprised how many risks that you assess in your everyday life. It is a legal requirement for employers to identify hazards and assess the risk of injury that employees face and eliminate them if possible or minimise them as far as reasonably practicable. Where risks are associated with manual handling a risk assessment must be carried out in a particular way. Your manager/supervisor is responsible for ensuring that this happens and you have a responsibility to contribute to the assessment where appropriate. The information and instructions you are given about how to work will be based upon this risk assessment and it is important that you read and comply with them.

As an employee you have a legal duty to assist in the identification of hazards and control of risks. Frequently you will recognise hazards that you can make safe e.g. a spillage. If the hazard cannot be removed, avoid the activity if possible. If this is not possible, report the hazard to your manager as soon as you can so that they can ensure a proper risk assessment is carried out. In an emergency situation, the emergency procedure must be followed. Even when a proper risk assessment has been carried out it is important that you always do an 'on the spot risk assessment' to check for new hazards before every activity, this only takes a few seconds. Try to remember the acronym **TILEO** and to report risks associated with:

Task – **do postures & movements involve?**

- holding loads away from your trunk
- twisting, stooping
- excessively reaching upwards
- long carrying distances
- strenuous pushing or pulling
- unpredictable movement of the load
- repetitive handling
- insufficient rest or recovery time

Individual capability – **does the job?**

- require unusual capability
- endanger those with health problems or disabilities
- endanger those who are pregnant
- call for special information/training

Loads – **are they?**

- heavy
- bulky/unwieldy
- difficult to grasp
- unstable/unpredictable
- intrinsically harmful e.g. hot/sharp

Environment – **are there?**

- constraints on posture
- poor floors
- variations in levels
- hot/cold/humid conditions
- poor lighting conditions

Other Factors – **do workers?**

- find attire affects movement/posture
- feel there has been poor planning, scheduling, communication
- lack training or information

Relevant health and safety legislation

There are many moral and financial reasons why people should be safe at work. There is also legislation that gives employers and employees guidance and responsibilities to ensure their safety. With regard to manual handling activities there are three main sources of law to consider:

- **European Law -** Legislation is required to harmonise standards throughout the European Union. The main way of achieving this is through a Directive, which each member state is required to translate into its own legislation.
- **Statute Law -** Sometimes referred to as 'criminal law' or 'written law' is designed to ensure fairness to all in society and has been the main source of UK legislation in modern times. European Directives brought about important changes to UK health and safety laws in 1992. A breach of statute law is a criminal offence and punishable through the criminal courts.
- **Common Law -** Also referred to as 'civil law' provides individuals with a means for redress/compensation e.g. those injured following an unsafe work activity. Each case is argued on its merits and expert evidence is sought to prove what standards are reasonable. Settlements/compensation can range from a few hundred to thousands of pounds (£803,000 is the largest compensation paid to a back injured nurse).

The following are the main pieces of legislation relevant to manual handling:

- **Health and Safety at Work etc. Act 1974**
- **Management of Health and Safety at Work Regulations 1999**
- **Workplace (Health, Safety and Welfare) Regulations 1992**
- **Manual Handling Operations Regulations 1992 (as amended)**
- **Provision and Use of Work Equipment Regulations 1998**
- **Lifting Operations and Lifting Equipment Regulations 1998**

Key points are given below. For full information please refer to the reading list.

Health and Safety at Work etc. Act 1974

Employers are required to:

"ensure as far as reasonably practicable the health, safety and welfare at work of all their employees"

This includes the provision and maintenance of:

- Safe systems of work
- Safe handling, storage, maintenance and transport of articles and substances
- Necessary information, instruction, training and supervision
- A safe place of work
- A safe working environment
- A written safety policy

Employees are required to:

- Take reasonable care of their own health and safety, and that of others who may be affected by what they do or fail to do
- Cooperate with the employer on matters of health and safety
- Not intentionally interfere with or misuse anything provided in the interest of health and safety

Management of Health and Safety at Work Regulations 1999

Employers are required to:

- Carry out risk assessments of all risks to employees whilst at work
- Assess the risks to non employees which arise out of the work activity
- Make arrangements for the health and safety of employees
- Provide health surveillance
- Appoint 'competent persons' i.e. Risk assessors
- Establish procedures for serious and imminent danger
- Cooperate with other employers
- Provide employees with relevant information, instruction, training and supervision to ensure health and safety
- Assess the capability of employees and provide training
- Take account of new and expectant mothers, young and older people

Employees are required to:

- Inform the employer (i.e. manager) of hazards
- Follow instructions given

Workplace (Health, Safety and Welfare) Regulations 1992

Employers are required to do what is reasonably practicable to secure appropriate working conditions in respect of four broad areas:

- working environment e.g. temperature, lighting, space, workstations and seating
- safety e.g. safe passage, windows, doors, floors, falling objects
- facilities e.g. toilets, changing facilities, drinking water
- housekeeping e.g. maintenance, cleanliness

Manual Handling Operations Regulations 1992 (as amended)

Employers are required to:

- **Avoid** hazardous manual handling operations where possible
- **Assess** any hazardous manual handling activity that cannot be avoided. This should include an assessment of all relevant factors including the task, load, working environment and individual capability of the worker and other factors.
- **Reduce** the risk of injury to the lowest level reasonably practicable
- **Inform** employees of measures to reduce risk and if reasonably practicable, give precise information about the weight of each load and the heaviest side of any load whose centre of gravity is not central

Employees are required to:

- Make full and proper use of systems of work put in place by the employer to reduce the risk of injury

Provision & Use of Work Equipment Regulations 1998 (PUWER)

These Regulations apply to all equipment that may be used at work e.g. trolley, sack truck, wheelchair, bed.

Employers are required to:

- Provide suitable equipment
- Assess the working environment where the equipment will be used to determine whether any additional risks are posed by its use there
- Ensure that equipment is only used for purposes for which it is suitable
- Ensure equipment is maintained in a safe condition and that maintenance records are kept
- Ensure that where equipment involves a specific risk only trained personnel use it
- Provide adequate information, supervision, instruction and training
- Control any risks associated with the use of machinery

Lifting Operations & Lifting Equipment Regulations 1998 (LOLER)

These Regulations apply to lifting operations and lifting equipment e.g. hoists and slings.

Employers are required to:

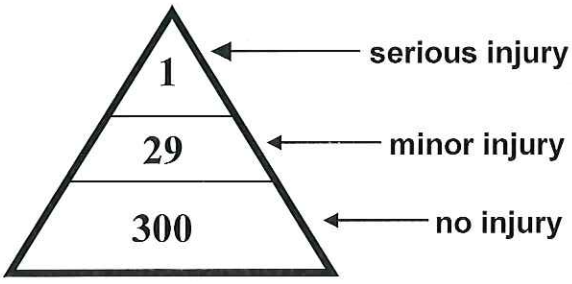
- Ensure that lifting equipment is safe and installed to minimise any risks
- Ensure it carries information to indicate safe working limits, its purpose and use
- Ensure that lifting operations are properly planned, supervised and performed by competent people
- Ensure regular examination/inspection of equipment is carried out by competent people i.e. 6 monthly examination
- Ensure that defective equipment is not used
- Keep maintenance/inspection records. A person carrying out an inspection is required to report defects to the employer

Reporting accidents and incidents

All accidents and incidents at work should be reported including those associated with manual handling. The **Health and Safety at Work etc. Act 1974 (HASAWA)** requires employers to create proper reporting systems and employees to cooperate with them in order to create a safe place of work.

The **Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)** require certain injuries, diseases and occurrences to be reported to the enforcing authority. This not only includes deaths, serious injuries, incidents where a person is taken to hospital, but any case where a person is off work for 7 days (not counting the day the accident happened) as a result of an accident at work. This also applies if the person is incapacitated but stays at work and is given light duties.

Fig: 2 Why it makes sense to report accidents/incidents



Although most accidents do not result in serious injury, it is vital to report them all so that action can be taken to remove the danger e.g. you might get away several times crossing the road without looking…….but sooner or later!!

What to report

You should report any unsafe incident, not just those that cause injury. This includes any work related incident you are involved in and any you witness involving colleagues or the general public. Remember, if your work involves travel and different locations such as home visits, you are also at work for these times. If an injury keeps you off work you should inform your employer at once as they only have a few days to report the incident.

How to report

You should have been informed of the reporting procedure for your organisation, but if not, contact your line manager or health and safety representative. Normally there will be an accident book or other forms to fill in. Do this as soon as possible after the incident and record everything including witnesses. The procedure will tell you what to do next e.g. who to report to. You may be required to complete other paperwork especially if the incident needs to be reported to an outside body, your manager/supervisor will show you how to do this.

Injury benefits

To be able to claim certain types of injury benefits following an accident at work there is a legal requirement to complete the accident book. If you are involved in an accident at work you must complete the accident book as soon as possible.

Legal responsibilities quiz

Please tick the correct answer/s

A. If you think there is a manual handling risk at work what should you do?		
1.	Discuss it with your supervisor or manager	
2.	Do your best to avoid injury	
3.	Accept it as part of the job	
4.	Fill in an accident form	

B. Manual handling risk assessments - which two of the following are correct?		
1.	Only concern managers	
2.	Should be carried out by managers with the involvement of staff	
3.	Should only be carried out on heavy loads	
4.	Should be carried out on all hazardous handling activities	
5.	Should only be carried out for individuals who need assistance to move	
6.	Should only be carried out when staff report back problems	

C. List 3 hazards that can make working environments unsafe:	
1.	
2.	
3.	

D. Which one of the following is true?		
1.	A written risk assessment is required for all handling activities	
2.	TILEO stands for task/individual capability/loads/equipment/other factors	
3.	Risk assessors must consider the views of other staff	
4.	The ergonomic approach means 'fitting the person to the task'	
5.	It is your manager's responsibility to remove hazards such as spillages	

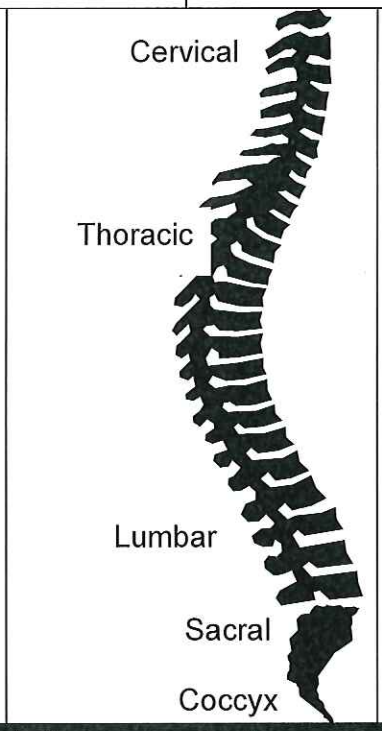
E. List three of your responsibilities under your organisations safer handling policy:	
1.	
2.	
3.	

F. What type of shoes should be worn for moving and handling activities?		
1.	Sandals	
2.	Mules with closed toes	
3.	Closed shoes with low heels	
4.	Flat shoes	

Structure and function of the spine

The spine is one of the most vulnerable parts of the body and yet most people make little effort to protect it. Those whose work involves manual handling are particularly prone to back injury and it is therefore important that they understand the basic structure of the spine, how it works, and the factors that may lead to pain and injury.

The spine - an overview

Structure		Function
▪ A column of 33 bones (vertebrae) linking the skull and pelvis, 24 are mobile, 9 are fused ▪ From the side it has 4 curves. ▪ The different areas of the spine are: 1. Cervical (neck) 2. Thoracic (chest) 3. Lumbar (lower back) 4. Sacral (back of pelvis) 5. Coccyx ▪ Intervertebral discs bind vertebrae together ▪ Ligaments and muscles attach to vertebrae ▪ The spinal cord is protected by vertebrae		▪ To provide a central support for the body ▪ To protect and distribute the spinal cord and nerves ▪ To provide flexibility and movement

The vertebrae

Structure	Function
▪ Each vertebra differs in size and shape ▪ They link together to form the spinal canal which contains the spinal cord ▪ Nerves pass from the spinal cord through the rear of the vertebrae to the rest of the body ▪ Projections at the rear and sides of the vertebrae make the facet joints which help to control movement	▪ To support the weight of the body ▪ Some vertebrae have particular functions e.g. thoracic vertebrae provide attachment for the ribs, upper neck vertebrae articulate with the skull ▪ All vertebrae have muscles, ligaments and tendons attached to them to create movement

Intervertebral disc

Structure	Function
▪ An outer casing formed by layers of tough fibre (**annulus)** ▪ An inner gel like substance (**nucleus)**	▪ To act as a shock absorber ▪ To allow movement between vertebrae ▪ To form a link between vertebrae

Ligaments	
Structure	**Function**
▪ Tough bands of fibre which span joints and are attached to bones at each end	▪ To stabilise and control movement of the spine ▪ Hold the vertebrae together
Muscles	
Structure	**Function**
▪ Bundles of fibres that contract and shorten or relax and lengthen ▪ They attach to bones by a band of tissue called a tendon	▪ Enable movement ▪ Stabilise the spine ▪ Provide a 'corset like' support around the trunk
Spinal cord and nerves	
Structure	**Function**
▪ The spinal cord runs from the brain through the spinal canal ▪ Pairs of nerves branch from the cord and emerge between the vertebrae ▪ The sciatic nerve supplies the legs and is the largest nerve in the body	▪ The spinal cord and the brain form part of the central nervous system which is responsible for the integration and control of all bodily functions

A healthy back requires all of the components described above to work in harmony. The spine is a complex structure and back problems are notoriously difficult to diagnose. We do know, however, that back pain and injury rarely occur in an instant but usually develop gradually over months or years. All the structures outlined above could be damaged if they are overloaded but the main causes of injury are as follows:

- Muscles can be stretched, torn or overworked which leads to strains or sprains
- Ligaments can be stretched or torn
- Nerves can be stretched or trapped
- The intervertebral discs can be severely damaged if too much pressure is applied, particularly when stooping. The nucleus can stretch and bulge or even burst through the annulus to give a prolapsed intervertebral disc which is extremely painful.

It is unusual for a person to suffer back pain from one single activity. It is much more common for a problem to develop over time, with the symptoms getting gradually worse.

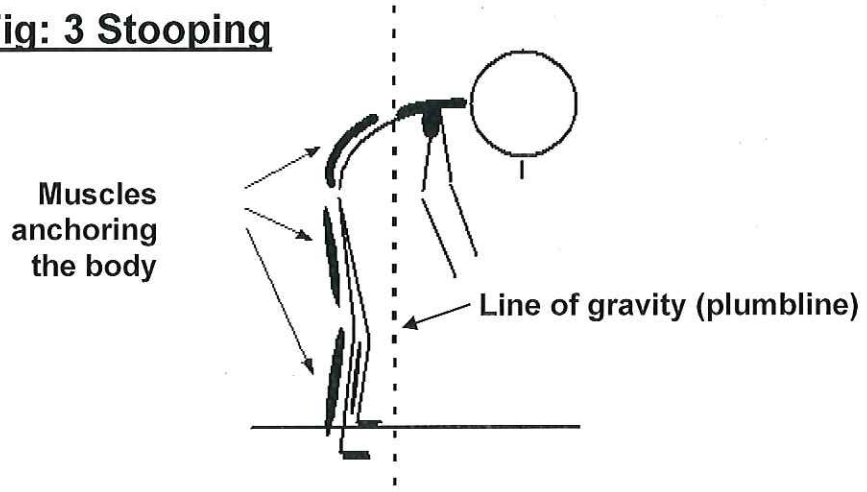
Causes and effects of musculoskeletal injuries

Cumulative stress

This is the slow accumulation of damage to discs, joints, muscles and ligaments caused by repeated use of poor postures e.g. stooping and twisting. It is often the precursor of a major problem such as a prolapsed disc. Because approximately 90% of back pain resolves within a short time there is a strong tendency to ignore signs that more serious damage is building up.

When we move the muscles we use contract or tighten and then relax again. These actions help the blood and body fluids to circulate taking oxygen and nutrients to the muscles and waste products away from them. If we stoop the muscles in the trunk and legs need to stabilise the lower body rather like the anchor of a moored boat (see Fig: 3).

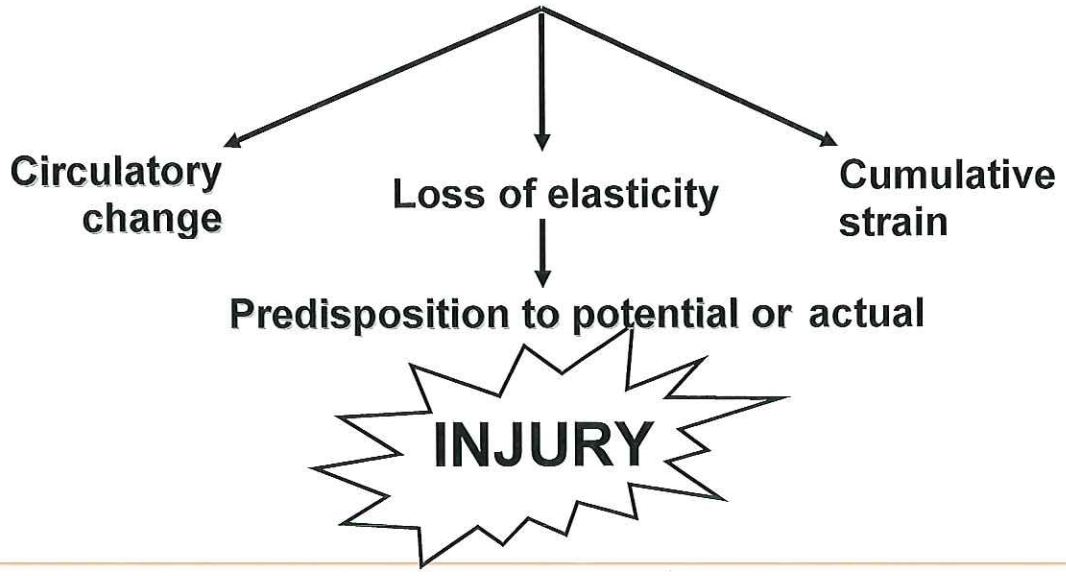
Fig: 3 Stooping



If muscles remain tense, e.g. by holding a stooped posture the 'pumping' action does not take place and the muscles begin to suffer. They become uncomfortable and tired, then painful and stiff or tingling and when you move it takes time for them to recover. If tension is repeatedly held in muscles and they do not have a chance to recover fully the effects build up. Over time some of their elasticity will be lost and the muscles will have a smaller range of movement.

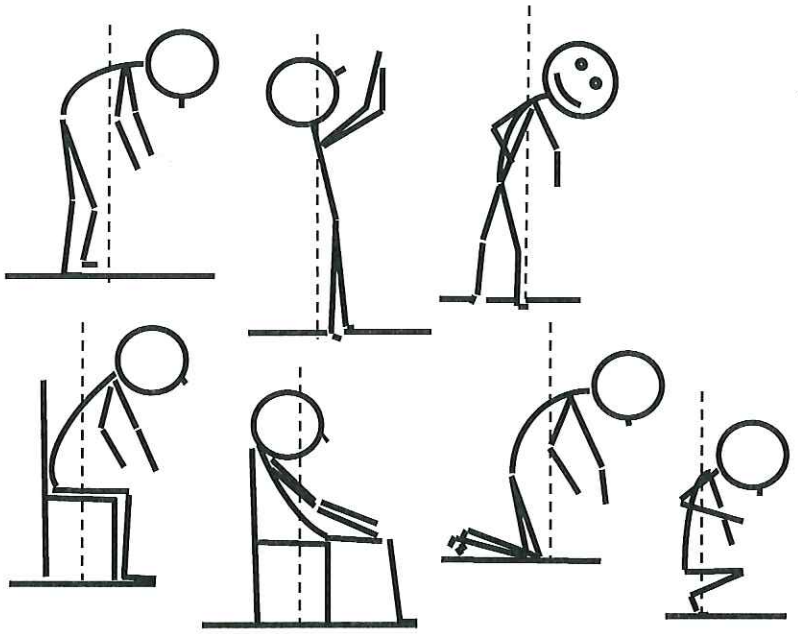
You may have noticed these changes in some people e.g. becoming more stooped or developing hunched shoulders. Once tissues have changed in this way they are more easily injured and recovery takes longer. Habitually moving in a stooped or unbalanced manner results is an inefficient way of moving which leads to muscle tension and a build up of damage known as 'cumulative strain'. This is the commonest cause of back and neck problems (see Fig: 4).

Fig: 4 Sustained muscle tension



Risk of injury increases when postures are sustained for long periods or are repeated regularly. Adding a twisting action, a load or a jerky/sudden movement increases the risks still further (see Fig: 5).

Fig: 5 Potentially harmful postures



Aggravated by:
- Sustaining
- Repeating
- Twisting
- Loading
- Jerky/sudden movement.

Traumatic injury

This occurs if there is a sudden application of violent force to the body where the muscles are caught off guard, e.g. due to unexpected movement of a heavy load. Damage may occur to muscles, ligaments, joints, discs or nerves.

Degenerative changes

Ageing leads to a gradual wearing of all weight bearing joints including those of the spine. Normally this does not create a problem but the process may be accelerated by misuse of the body, e.g. long periods of heavy lifting, habitual poor postures.

Psychological factors

Emotional stress is being increasingly recognised as a contributory factor to back pain e.g. working under extreme pressure, interpersonal conflicts. A typical physical reaction to stress is to tighten the muscles of the neck and low back which may predispose us to strain. Increased accident rates are often linked to stress because it can lower the attention span and reduce powers of judgment.

Other causes of back pain

Approximately 4% of back pain is thought to be caused by other factors, e.g.
- Gynaecological causes - periods, menopause and pregnancy
- Osteoporosis - softening of bone rendering it more liable to fracture.
- Disease - e.g. rheumatoid arthritis, ankylosing spondylitis and conditions affecting the kidneys, bladder

Although the proportion of back pain caused by non functional factors is low it is always advisable to check with your doctor if <u>any</u> symptoms of back pain persist.

Anatomy quiz

A. Which one of the following most accurately describes the spine?		
1.	The spine is delicate and vulnerable and should be kept straight to protect it from injury	
2.	The spine is strong and flexible and may be moved safely	
3.	The spine is not designed to cope with lifting or pushing/pulling movements	
B. To protect the knees when kneeling should you?		
1.	Point your toes away from you	
2.	Curl your toes under your foot	
C. Which four of the following are true?		
1.	Static postures are a major cause of musculoskeletal pain	
2.	Stress can be a cause of back pain	
3.	Smoking can damage the spine	
4.	Most back pain is caused by cumulative strain	
5.	Any movements which don't cause pain are safe	
6.	When working at floor level it is sensible to squat if possible	

Potential injuries quiz

List 3 handling activities that could cause injury	Why might this activity cause injury?	What type of injury may occur?
1.		
2.		
3.		

Manual handling principles quiz

Please tick which you think is the safest when moving or handling a load:

1a	To stop and plan what you are going to do	
1b	To get on with the job and avoid wasting time	

2a	To keep a load close to your body	
2b	To hold a load away from your body	

3a	To keep the heaviest side of a load close to your body	
3b	To keep the heaviest side of a load away from your body	

4a	To lower loads close to you then slide into their final position	
4b	To lift loads away from you to their final position	

5a	To keep your knees relaxed as much as possible	
5b	To keep your knees locked straight as much as possible	

6a	To keep your feet close together facing forward	
6b	To keep your feet slightly apart and offset	

7a	To stoop or squat to pick up a load	
7b	To lower to pick up a load by relaxing the knees and back	

8a	To use the whole of your hand to grip a load	
8b	To use your fingers and thumbs to grip a load	

9a	To twist from the waist to handle a load	
9b	To avoid twisting when handling a load	

10a	To keep your head up when carrying a load	
10b	To keep your head down when carrying a load	

11a	To use strong jerking movements to move a load	
11b	To move a load smoothly without jerking it	

Principles for safer manual handling

To reduce the risk of injury account should be taken of the handler's individual capability. Consideration also needs to be given to making the activity as safe as possible by changing the task, load and working environment. It is also necessary to apply safer handling principles when moving loads. In 2003 the HSE investigated the range of guidance about manual handling and compiled a list of commonly agreed principles. These are listed below. It may not always be possible to adhere to them all and whenever this is the case there may be an increase in risk, which needs to be addressed.

1. Plan and prepare

Before handling a load plan what you are going to do. Prepare the environment if necessary, use appropriate handling equipment and get help if needed. Do not attempt to move more than you can safely handle and consider breaking the activity into easy stages, e.g. rest a load midway when lifting from floor to shoulder height.

2. Keep close to the load

Keep as close as possible to the load to reduce stress on the spine (it is often easier to do this by adopting an oblique angle). If it is not possible to get close to a load try to slide it towards you before attempting to lift it. Keep the heaviest side closest to you. Lower loads close to you then slide if they need to be positioned further away.

3. Create and maintain a stable base

To ensure stability and ease of movement keep your knees relaxed (not locked or excessively bent) and offset your feet (have them slightly apart with one slightly forward and both turned out slightly). The weight should be evenly distributed over both feet. Be prepared to move your feet whilst handling to maintain stability.

4. Moderately flex back, hips and knees

Relax the knees, hips and back as you prepare to take hold of a load. Avoid extreme bending of any joints where possible, e.g. full squatting, stooping.

5. Use a secure hold

Muscles work more efficiently if the whole of the hands are used to hold loads rather than gripping with the fingers and thumbs since there is a greater surface area in contact with the load and this provides more security. In many situations the arms and trunk can be used as well as the hands to provide an even more secure hold.

6. Avoid twisting

Twisting or leaning sideways, especially when handling, places additional pressure on spinal joints, intervertebral discs, reduces the effectiveness of muscles, and increases the risk of injury. Keep your shoulders level and facing in the same direction as the hips during handling activities. Move your feet to avoid twisting when turning to the side.

7. Lead with the head

If the handling action is initiated by an upward movement of the head the spine returns to its strongest upright position and the body is able to recruit the large muscles designed for lifting. Look ahead, not down, once you have a secure hold of the load or person being assisted.

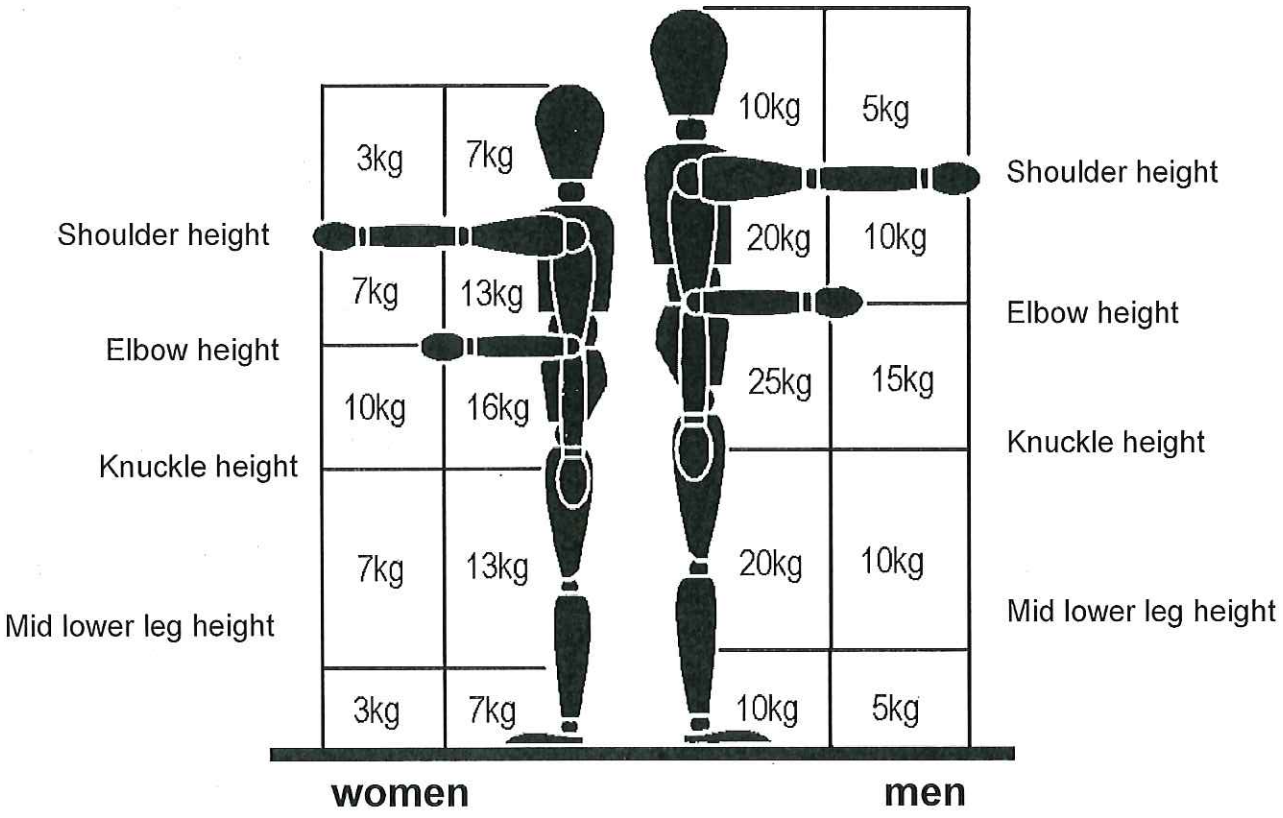
8. Move smoothly

Moving loads by jerky movements is potentially hazardous. Move loads smoothly and avoid jerking or snatching at them. Rapid momentum is often used if a load is very heavy so always avoid loads that require too much effort to move.

Risk assessment filter

Appendix 3 of *Manual Handling, Guidance on Regulations, Manual Handling Operations Regulations* 1992 (as amended) explains that the Regulations set no specific requirements such as weight limits. It states that assessment should be based on the range of relevant factors listed in Schedule 1 and Appendix 4 of the Regulations. To avoid wasting time on unnecessary assessments Appendix 3 offers some numerical guidelines to help identify activities that need detailed assessment (see Fig: 6). It is important to understand that these guidelines are not limits. They may be exceeded where a detailed assessment shows that it is appropriate to do so. The chart below is taken from Appendix 3, for full details please refer to www.hse.gov.uk - Manual Handling at Work. A brief guide 2012 (p8).

Fig: 6 HSE Risk assessment filter – lifting and lowering



Weight conversion table

3kg = 6.6lb	13kg = 2st	25kg = 3st 13lb
5kg = 11lb	15kg = 2st 5lb	102kg =16st
7kg = 1st 1lb	16kg = 2st 7lb	125kg =19st 10lb
10Kg = 1st 8lb	20kg = 3st 2lb	150kg =23st 9lb

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 also assumes the distance is no more than 20 mts. If these assumptions are not met a more detailed risk assessment is required

	Men	Women
Guideline figure for stopping or starting a load	20kg	15kg
Guideline figure for keeping the load in motion	10kg	7kg

Guidelines for team handling

As an approximate guide, the capability of a 2 person team is two thirds the sum of their individual capabilities and for a 3 person team the capability is half the sum of their individual capabilities. Teams of more than 4 persons are unlikely to work successfully.

	One person	Two persons	Three persons
Men	25kg	33kg	37kg
Women	16kg	22kg	24kg

Safe handling quiz

What equipment could be used to make moving the following loads safer?
Large quantities of laundry:
Large chairs:
Buckets of water for mopping floors:
Large quantities of groceries/foodstuffs:

How can the environment be a barrier to moving loads?	How can you overcome these barriers?

Fitness and self care

Fitness and self care are key factors in the prevention of and recovery from musculoskeletal injuries. Many people find it difficult to look after their own health and often report that the pressures of work and family commitments do not leave enough time. Organisations are now recognising the need to help employees overcome these problems if they are to avoid unnecessary pain and injury.

Exercise can help improve psychological health and wellbeing which is arguably as important as physical health. Benefits may include:

- reduced stress levels
- relaxation
- energising effects following exercise
- feeling good factor
- increased self esteem and confidence
- social interaction

Exercise safely

- Most people, including older people, do not need a medical check up before starting to exercise but it is best to check with your doctor if you:
- Have had chest pains, high blood pressure or heart disease
- Have chest trouble such as asthma or bronchitis
- Have back problems or have had a 'slipped' disc
- Have joint pains or arthritis
- Have diabetes
- Are recovering from an illness or operation
- Think that exercise may affect any aspect of your health
- Check instructors hold a nationally recognised qualification

Be sensible when you exercise

- Begin gradually and work up to more strenuous exercise
- Choose a class or activity suitable for your level of fitness
- Always take a few minutes to do some warm up and cool down exercises
- Wear appropriate clothing and footwear
- Do not eat a large meal before exercising
- Drink water before, during and after exercise
- Do not exercise if you have a cold or flu

Stop exercising if you experience

- Pain
- Dizziness
- Feeling sick or unwell
- Unusual fatigue

Sports such as swimming, walking and cycling are normally good for general fitness but some sports such as tennis, squash and football carry a higher risk of back injury because they involve vigorous twisting or bending. Long distance running, step aerobics and exercise on hard surfaces can impose stress on the joints especially those of the lower limbs and spine. It is better to avoid these if you are experiencing back pain or are prone to recurrent back problems.

If you have back pain

Back pain affects nearly everyone at some point in their life but is rarely serious. If you have severe pain that gets worse over several weeks, or if you are unwell with back pain, you should see your doctor. You should see a doctor at once if you have:

- difficulty passing or controlling urine
- numbness around your back passage or genitals
- numbness, pins and needles or weakness in both legs
- unsteadiness on your feet

The best treatment is to carry on normal activities as far as possible. These days it is recommended that bed rest is avoided since it usually makes matters worse.

Pain management

- Simple painkillers can be used to help manage your pain (follow instructions)
- A cold pack or local heat can be used for short term symptomatic relief

Activity

- Try to remain at work or get back as soon as possible even if you still have some pain. The longer you stay off the more likely you are to develop chronic pain.
- Manipulative treatment may help e.g. from a registered physiotherapist, chiropractor, osteopath (ask your GP, or occupational health service to refer you).
- Traction and lumbar corsets may be used for pain relief to help you to get active but may not provide lasting benefit.

Action

- Tell your doctor, nurse or therapist about your work duties.
- Discuss the problem with your employer. Recent guidelines emphasise the need to monitor low back pain reports in the workplace and to:
  - assist employees to stay at work if possible with any necessary modifications
  - maintain contact if employees are not able to remain at work
  - support the return to work even if not entirely pain free
  - provide rehabilitation

Most people are back to normal activities by about 6 weeks. If not you should be getting help from your GP, therapist and employer.

New and expectant mothers

How pregnancy affects work will be unique to the individual and may vary during the pregnancy. It may affect ability to carry out manual handling activities safely due to fatigue, altered balance, sickness, swollen ankles, back ache, difficulty in standing, walking, climbing, reaching, bending and increased risk of injury due to chemical changes in the muscles and ligaments. There are no hard and fast rules about how workload should change during pregnancy. This will depend on a risk assessment which takes into account each particular situation. (Further information is available in the HSE leaflet "Occupational Health Aspects of Pregnancy").

Do you have any limitations to your health and fitness which affect your safety when handling loads?

What steps can you take to address these?

Guideline B1: Handling inanimate loads

The safer moving and handling principles should be applied to all of these actions but before you attempt to move anything first consider if the manoeuvre may be hazardous. **Do not move anything that is likely to harm you.**

Where a formal/written risk assessment has been conducted check it for instructions. Consideration should be given to:

- **Using a trolley or wheeled transport rather than carrying a load**
- **Dividing the load or making it smaller**
- **Sliding, rolling or walking a load rather than lifting it**
- **Changing storage arrangements to make load handling less hazardous**
- **Requesting that goods are packed in smaller quantities**
- **Securing unstable loads**

Lifting and putting down

Avoid lifting and putting loads down at floor level where possible.
Do not lift loads that are too large to safely handle e.g. too bulky to pass between your knees, interfere with vision.
Use intermediate levels if necessary. If you decide a load is safe to lift:

- Position yourself as close as possible to the load
- Relax down to the load maintaining your balance
- Take hold with an open palm hold. Avoid gripping with only fingers and thumbs. If necessary manipulate the load so that the heaviest side is closest to you.
- Hold the load close and lead the movement upwards with your head adjusting your feet as necessary to maintain balance
- To put a load down hold it close and relax down keeping in balance

Pushing

Avoid pushing that requires too much effort e.g. up hills or heavy loads. Do not push down inclines where a load may get out of control. Avoid jerky movements, do not overload trolleys, ensure good visibility, and check that hands and fingers will not get trapped when passing through doors. Check the condition of castors/wheels etc. and report defects. If you decide a load is safe to push:

- Position yourself close and square on to the object
- Relax your knees and offset your feet
- Use the palms of your hands and transmit body weight through the arms
- Initiate the action with an upward movement of your head
- Keep close to the object, take short, steady steps and avoid twisting

Pulling

Pulling often involves twisting in order to see where you are going. Since this is a high risk factor avoid pulling loads long distances or take steps to avoid twisting e.g. ask a colleague to guide you. Do not pull down inclines where the load may get out of control. Avoid jerky movements and pulling with one arm. Do not overload trolleys and ensure hands and fingers will not be trapped when passing through doorways. Check the condition of castors, wheels, etc. and report defects. If you decide a load is safe to pull:

- Position yourself close and square on to the object
- Relax your knees and offset your feet
- Use the palms of your hands to grasp the object
- Initiate the action with an upward movement of your head
- Keep close to the object, take short, steady steps backwards and avoid twisting

Turning

Avoid twisting when turning an object. When moving larger objects e.g. beds, hoists, keep close to the load and move your feet. Do not rely on arm and shoulder strength. Check the condition of castors, wheels etc. and report defects. If you decide a load is safe to turn:

- Turning is most easily achieved by pulling or pushing on a corner of the object to be moved
- Find a balanced position close to the corner of the object
- Use the palms of your hands to exert force on the corner and move the load leading the turning action with an upward movement of your head
- If turning large objects, e.g. beds, adopt a position where the force you apply will be most effective, e.g. towards a corner
- Take short, steady steps, moving your feet in the direction of movement and avoid twisting

Carrying

Avoid carrying loads long distances. Use resting points or preferably wheeled carriers. If necessary, make more than one journey. Do not carry loads that are so large that they block visibility. If you decide a load is safe to carry:

- Keep the load close to you
- Hold the heaviest side nearest to you
- Keep your elbows in close to your body
- Use the palms of your hands, arms and upper body to support the load

Reaching

Avoid handling heavy or bulky loads above shoulder level or at arm's length. Do not climb on unsteady surfaces to reach an object, e.g. chairs/beds. If necessary use a suitable stepstool or stepladder. If you decide that it is safe to reach a load:

- Position close and square on to the load you are going to handle
- Offset your feet so that you are balanced
- Extend your arm/s beyond the object and take hold of it from as far below as possible
- If necessary slide the load to you and manipulate it so that the heaviest side is closest to you
- Raise or lower the load keeping it as close as possible
- Adjust your feet as the load moves to maintain balance

Handling whilst kneeling

Avoid handling whilst kneeling wherever possible. Consider whether the activity may be performed in some other way, e.g. by raising the load. If kneeling is unavoidable:

- Always protect the knees by kneeling on something soft e.g. kneeling mat, kneeling stool, kneeling cushion, folded towel
- Kneeling on one knee is preferable to kneeling on both
- Kneel as close as possible to the object
- Point toes away from you to protect the knee joint
- Kneel for short periods only
- Stand by relaxing the back and leading the movement up with your head (if necessary handle the load to an intermediate level, then stand and move it as described in the section on lifting)

Team handling

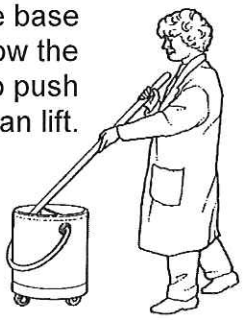
Working with others may introduce additional risks due to the increased need for coordination and space. If more than one person is required to move a load consider whether it could be moved by some other means, e.g. mechanically or broken down into smaller components. If team handling is necessary:

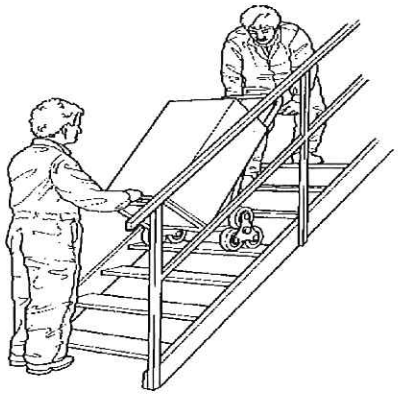
- Match handlers, as far as possible, so that they are of broadly similar height and physical capability. The strongest team members should take the heavier part of the load.
- The most experienced handler should plan and take charge of the operation ensuring that movements are coordinated but there should also be good communication between team members
- Remember that team handling introduces additional problems therefore the load that a team can lift safely is less than the sum of the loads that the individual team members could cope with when working alone

Equipment for safer handling

Using a hosepipe to fill a bucket avoids lifting a full bucket from the sink. A trolley eliminates carrying

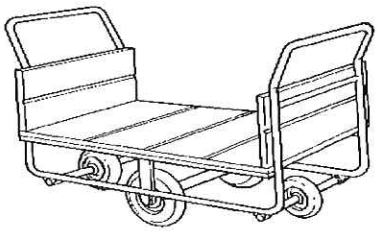
Castors on the base of a bucket allow the cleaner to push rather than lift.





Some sack trucks have special wheel arrangements to enable loads to be moved up and down stairs.

Roll cages should not be filled so that the contents are unbalanced or obstruct the vision of the operator.



The central axle of a balance truck makes it highly manoeuvrable where space may be restricted.

Ref: HSE Solutions you can handle (1994)

Guideline B2: Posture when working at a desk

Working regularly in fixed positions at a desk to perform written tasks, use computers etc. can cause back problems and other musculoskeletal disorders. These can be avoided if the environment is suitably designed and the work planned to eliminate prolonged periods of static and/or repetitive work. The following list gives general advice on steps that help to prevent such problems:

1. Adjust the environment

- Items most frequently used should be placed in front of you, e.g. screen, keyboard, files. An in-line document holder between the screen and keyboard may help avoid using awkward neck and eye movements.
- Arrange your desk and equipment to avoid direct and indirect glare
- Make sure there is space under the desk to move your legs freely
- Maintain a safe environment around the desk, e.g. avoid storing loads on the floor.

2. Adjust equipment (see fig overleaf)

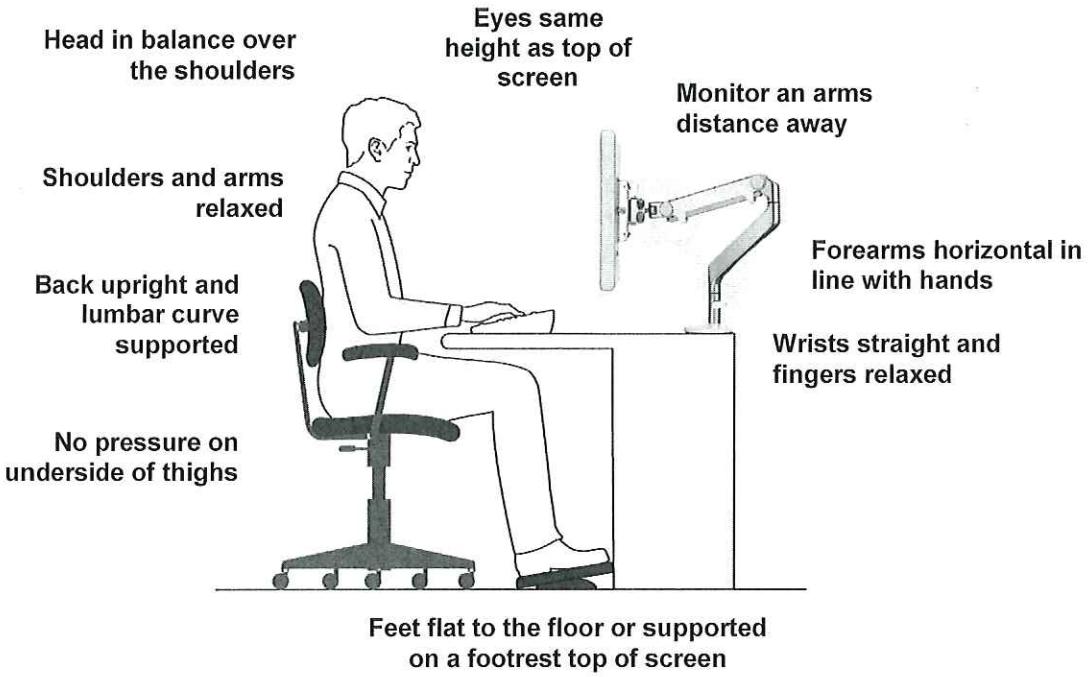
- The chair should be adjusted so that you are able to maintain a reasonably upright position with the lumbar curve supported. The height should be adjusted so that the hips are slightly higher than the knees and the angle between upper arm and forearm at 90^0 with a straight line between the elbow wrist and fingertips. If the feet are not fully supported on the floor a footrest should be used.
- If possible the desk height should be adjusted to bring the work surface to the correct height
- The computer screen should be at arms distance away and the top of the screen should be at eye level (so that you do not spend too much time looking down or up which puts pressure on the eyes and muscles around the neck and head)
- The mouse should be within easy reach so it can be used with the wrist straight and the shoulder relaxed
- Don't grip the mouse too tightly or hold it when you are not using it

3. Work routine

- Avoid doing the same activity for long periods of time. Vary the type of work.
- Take short breaks. Activities away from the desk are good to relieve fixed postures. Build in some activities that involve walking to aid circulation and use different muscles.

4. Report pain

- Report pain/lasting discomfort to your manager. If necessary request a workstation assessment.



Working with portable computers

- Use a suitable case to carry the computer, e.g. rucksack or an across the body shoulder strap
- Don't carry more equipment than is necessary

If your laptop is your main computer:

- Raise the computer so that the screen is at a suitable height
- Use a separate keyboard and mouse
- A laptop stand which incorporates a document holder is shown below.
- Refer to desktop information above for postural guidance.

Reference: Working with VDUs: www.hse.gov.uk

Guideline B3: Posture when driving

There are clear links between driving, back pain and other musculoskeletal problems. Research has found that people who drive cars for more than four hours a day are six times more likely to take time off work due to back trouble than those who drive for less than two hours.

One of the main difficulties with the whole process of driving is that you are essentially sitting still in a fairly confined space for long stretches at a time with little or no movement. The following key points give general advice on how to avoid injury:

- Choose a car that fits you, allows you to adopt a range of good driving postures and has boot storage that is 'back friendly'
- Take regular breaks on long journeys. Avoid journeys of more than 4 hours per day if possible. Take a short walk and stretch regularly.
- Try to avoid twisting when getting in and out of the car, turn your whole body into position as your legs are moved in and out and if there is restricted space slide the seat back
- Think about your posture, keep your chin in, don't grip the steering wheel tightly and relax the shoulders. Adjust mirrors to minimise twisting around in your seat.

Adjusting your driving position

- Raise the seat height to give good vision of the road and adequate clearance from the roof
- Move the seat forwards until you can easily fully depress the clutch and accelerator pedals
- Adjust cushion tilt angle so that the thighs are supported along the length of the cushion
- Avoid pressure behind the knee
- Adjust back rest so it provides continuous support along the length of the back and is in contact up to shoulder height. Avoid reclining the seat too far as this will cause excessive forward bending of the head and neck, and you may feel yourself sliding forwards on the cushion.
- Adjust lumbar support to ensure even pressure along the length of the back rest
- Ensure the lumbar support 'fits' your back and is comfortable with no pressure points or gaps
- Adjust the steering wheel for easy reach
- Check for clearance for thighs/knees when using pedals and ensure display panel is in full view and not obstructed
- Adjust the head restraint to ensure upper edge is aligned with the top of the head

References:

- Back Care for Drivers www.backcare.org.uk
- Take the pain out of Driving www.csp.org.uk

Further information

Further information about the following relevant legislation and useful links can be found on the HSE website www.hse.gov.uk

- Management of Health and Safety at Work Regulations 1999
- Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)
- Manual Handling Operations Regulations 1992 (as amended) (MHOR)
- Health and Safety (Display Screen Equipment) Regulations 1992 as amended by the Health and Safety (Miscellaneous Amendments) Regulations 2002
- HSG115 Manual Handling. Solutions you can handle
- Provision and Use of Work Equipment Regulations 1998 (PUWER)