

MANUAL HANDLING

TRAINING FOR HANDLERS Support Pack





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INTRODUCTION

Research has shown that a successful training programme must do more than teach delegates good techniques. You may be trying to change bad habits that your delegates have acquired over a lifetime and this can only be done if you produce convincing arguments explaining why change is necessary. Achieving this can be especially difficult if your delegates have not themselves experienced pain or been injured by less safe handling technique. This course will explore both the theory and the practical aspects of safer handling technique.

As explained by your OFI trainer, you must remember that people learn in different ways. This course has been designed to cater for different learning styles. PowerPoint is a great tool whilst training, however it should be used as one of the tools in your box, *NOT* as your whole training session. This training programme has been created to incorporate several different learning styles including the use of a whiteboard/flipchart, group activities, PowerPoint presentations, and practical activities to facilitate learning.

Below is the key for identifying the different tasks/learning styles used throughout this support pack:



PowerPoint slide



Whiteboard activity



Group task



Practical activity

COURSE CONSIDERATIONS

Course Structure

It is vital to establish what the training needs to achieve, what messages you need to deliver, and what the students expectations of the course are. The major role of the trainer is to facilitate opportunities for learning during their sessions.

If possible, prior to the first meeting, the trainer should find out as much information as possible about each delegate, the tasks they are required to preform, and the environment in which they carry out these tasks. This will enable the trainer to identify any specific needs within the group, and to tweak or *fine-tune* the way in which they deliver the course.

Planning

Good planning is important, as well as good record keeping - retaining records of exactly what has been taught and records of how each of your learners' progress. This will include your syllabus, scheme of work, session plan, handouts, assignments and activities. [Gravells, 2008]

The session plan should include different types of activities to cater for the the group as a whole with regards to their learning styles. Also having a good variation of activities can increase the delegates' attention span and he/she is likely to be more stimulated and retain knowledge better.

Ice Breakers

An ice breaker should never be underestimated, epecially when you have a new group of people who are not familiar with one another. A ten minute ice breaker at the start of the day can really help to gel the group, relax the delegates and make the trainers life easier - it is a great catalyst for interaction. Throughout the session, a lesson plan can also be used as a reference guide for the trainers to make sure that all areas of each session have been covered.

Evaluation

All trainers will benefit from the feedback of their students. Positive feedback is always good to receive from a group as it can give the trainer confidence that they are being well received. However, because there are so many aspects to a trainers job, there will often be areas with room for improvement, or areas which could benefit from further clarity.

Use of a 'feedback form' is a great way for trainers to receive feedback from their delegatees. However, the trainer should consider carefully about when they hand out the feedback form. Handing the form out at the very end of the session often results in students rushing to complete the form as they are keen to leave as soon as possible. Handing the form out before you summarise the course may give a truer reflection and more detailed and considered feedback, as it gives the delegates more time to think and reflect as they will not be able to leave straight away anyway.

Self evaluation is also a key part in a trainer's development. The trainer may have identified areas where they could have delivered something better, explained something in a different way, or dealt with problems in an alternative way. This is where the trainer can analyse and take credit for their accomplishments, and learn from their failures.

Ground rules

Ground rules are the basic rules or principles that govern the way in which something is done. They are the minimum necessary rules to carry out productive learning. These may include arriving on time to a session, turning phones to silent mode, not interrupting delegates when they are talking and respecting health and safety regulations. One method of setting the ground rules is to purely tell the students, "Here are the ground rules and you must stick to them." The advantage of this method is that it is very quick, and you will be able to quickly carry on with the rest of the course. On the other hand, this does not allow any discussion and many people do not like to be told or dictated to, they prefer to be reasoned with.

Another option is the allow the delegates to establish their own rules. This can be a good method as they are immediately given responsibility, however with no tutor input they may cross boundaries and suggest unreasonable proposals, for example, "as a group we have decided on a break every twenty minutes throught the day." Ground rules should be mutually agreed by both the trainer and the delegates attending the course.

Resources

With advances in technology there are more and more resources available to trainers which can improve their students' learning pathway. Before trainers decide on which resources they should use, they must have a clear understanding of the different learning styles that people have (covered in the next section) so that all students can gain the maximum benefit from the course.

LEARNING STYLES

Models

There are various different models used to gain a greater understanding of an individual's learning preference. Honey & Mumford (1982) identified four distinct learning preferences. These are Activists, Theorists, Pragmatists and Reflectors. Another model is the VARK model. VARK is an abbreviation for Visual, Auditory, Read/Write and Kinaesthetic and it classifies learners by their preferred mode of interaction. This model also facilitates a multimodal learning style for learners who have more than one preference.

Regardless of which learning preference model is used, the overwhelming message for trainers is that we must adapt our training to cater for all of the different needs within our classroom. If possible, a VARK questionnaire could be carried out prior to the course for the benefit of both the trainer and the delegate.

Types of learners

Traditionally, health and safety training has had a huge reliance on PowerPoint presentations. Many of your delegates will not be learning or retaining information if you simply real off a mammoth PowerPoint presentation. This is not to say that PowerPoint has no place in teaching; in fact, it does have many positive attributes however training can become very one dimensional. There are so many different resources and teaching methods available to teachers which will engage and incorporate all different types of learning styles. The section below explains the 4 elements to the VARK model.

1. Visual Learners - Trainers must make use of as many visual aids and activities to help these students. When teaching manual handling using a full-size flexible spine to demonstrate in 3D the movements and makeup of the spine can really help this type of learner. Support this with the use of colourful diagrams on a whiteboard, smart board and anatomical illustrations on a PowerPoint presentation. Large blocks of text will hamper the learning process of visual learners - highlighter pens or bold type can be used to draw attention to the key points that you are trying to make. Visual learners will gain from visual/practical demonstrations.

- 2. Auditory Learners These learners particularly learn from spoken as opposed to written material. Auditory learners will benefit from trainers using variations in their pitch of voice, so trainers must avoid a monotone pitch as this will disengage auditory learners. Learners with this preference like to explain things to others and will therefore like to be involved in class and group discussions. Other resources that can help auditory learners include videos to complement text and audio captions. These types of learners tend to be slower readers so trainers should give realistic time frames to complete reading-based tasks.
- 3. *Read/Write Learners* Learners with this type of learning preference tend to prefer information to be displayed in written form and enjoy reading and writing in all forms. Therefore, written handouts with a reading list around the subject are essential for these learners. This type of learner tends to rely heavily on note taking, so note pads will be a good resource to allow these learners to convert diagrams and flow charts into note format.
- 4. *Kinaesthetic Learners* Kinaesthetic means doing. These learners tend to be extremely good with their hands and remember things that they have physically done. Therefore, practical tasks are particularly beneficial. During your courses all the theory components are to support a practical activity such as lifting, pushing and pulling tasks. The last third of the course involves the delegates performing these tasks.

You may wish to visit the Vark Learn website at <u>www.vark-learn.com</u> for more information.

Inclusion

Inclusion means involving all learners in a classroom without directly or indirectly excluding anybody.

The first step to inclusion within a teaching situation is generating a good rapport with the group. This allows the trainer to identify different needs with the group. Creating a relaxed environment will make people feel that they can become involved and interact within the group. This will indirectly allow delegates to have a greater understanding of each others needs. Ice breaker activities are a very good way to understand more about the group dynamics as well as having fun. To promote inclusion for all of our learners we must again consider their learning style.

SLIDE 1 - INTRODUCTION (THE 'WHY', NOT JUST THE 'HOW')



The purpose of this session is to reduce and to help prevent musculoskeletal ill-heath amongst your employees. Most, if not all your delegates, know what the safer handling and seated posture is. They also know that it if we use safer techniques, we may prevent an injury in the future. However, very few people adopt good posture to prevent an injury, they tend to use good posture because they have *suffered* an injury.

This session will make your delegates think about all of the reasons why people adopt compromised postures in day to day life, and make them appreciate all of the benefits if they do undertake safer handling techniques.

Ice Breaker: Allow the delegates 2-3 minutes to think of 5-10 things that they enjoy doing in their lives. Using your white board, ask the group to call out some of the items on their list. You should collate a list of at least 15-20 items. These often include the following:

- Socialising
- Spending time with family and friends
- Playing sports
- Holidays
- Money
- Sleeping
- Music
- Watching Films
- Meals out etc.

Now ask the group How many of these activities can be done with a chronic injury? Ask the group how they would feel if their life was so restricted and who would be affected by this.

Few studies have looked into the psychological effects of chronic pain as it can be very subjective. However, a study carried out by Sullivan MJ, Reesor K, Mikail S, Fisher R, showed the prevalence of major depression in patients with chronic low back pain (CLBP) is approximately three to four times greater than that reported in the general population.

When a colleague, friend or family member is unable to go to work because of a chronic pain disorder many people think that all they have to deal with is the pain. However, it can restrict your life dramatically and possibly affect those around you. Our culture tends to deal with pain very reactively rather than proactively. People seem to use correct lifting and seated postures when they are experiencing back pain or discomfort. Here is a question for you.... Why do we not ALWAYS use safer handling techniques and seated posture, and therefore reduce our likelihood of experiencing pain in the first place?

This should be a 'hot topic' for your staff, given the effect that pain, loss of earnings, poor quality of life and stress-related symptoms may have on their health. As with most training however, although the staff may see the necessity of investing in 'best practice' they will also acknowledge that they may not always comply with what they understand this to be. It is important to start by acknowledging this and identifying any barriers on their part, both subjective and objective that may prevent them from 'buying into best practice'. As world-class weightlifters will tell you.... 'train the brain, not the muscle'.

At the start of each training session it is useful to outline the stated aims and objectives of the course.

The aim of course reflects 'where we want to get to' - in this case, we want to teach our employees the skills and knowledge to prevent unnecessary stress and strain on the body, which may give rise to ill-health.

The objectives of the course will reflect 'how we are going to get there' – in this case, the delegates will be able to describe the nature and mechanisms of injury, give reference to basic anatomy, ergonomics and safer handling posture. You will also apply this in practical sessions.

SLIDE 2 - WHAT IS MANUAL HANDLING?



Ask your group which industries they think have the highest injury rates and why? You can expand on the term load (objects, people and animals) this might help them.

People handling/caring professions traditionally have a very high injury rate. You could ask your group what they think has been done to try to reduce these injury rates? This section of industry has spent millions of pounds on handling equipment such as hoists, slide sheets, adjustable beds, etc. to make the job of a handler more ergonomic.

Training Query: Discuss the positive aspects of having a manual job.

It is estimated that 29% of the UK population sit down for more than 15 hours a day (British Chiropractic Association, 2009). This level of inactivity is not good for the body and can result in its own set of injuries and related health issues.

SLIDE 3 - MANUAL HANDLING OPERATIONS



Training Query: How much of our daily manual handling actually occurs in the workplace?

Many of the people on your course could be more at risk at home? Discuss this with your group.

Many of the delegates attending your manual handling courses may consider themselves to be of a relatively low risk, in regard to the manual handling activities that they participate in while at work. For example, office workers, drivers, etc. Occasionally people do not see the point in attending manual handling courses, and may even consider them a waste of their time.

A question to these people could be, "How many manual handling tasks do you think you've already performed before arriving at work today?" Did they reach out of the shower to grab a towel, bend over to pick some clothes up off the floor, push the wheelie-bin to the end of the drive, or carry the recycling box outside? Chances are they've already performed dozens without even noticing.



Training Exercise: Ask the group what they would consider to be best practice with respect good lifting technique. You won't be surprised to hear that they already know some of the basic principles i.e. lift with the legs and keep your back straight. Perhaps you won't be surprised to hear that most, although they know what best practice is, still fail to put it into practice. Why?



Divide them into groups of two and ask them why people don't always invest in best practice even though they may be aware of the basic principles. List the results on the whiteboard. Often the list looks a little like this:

- Habit
- Time constraints
- Space constraints
- Individual health concerns
- Peer group pressure
- Lack of suitable equipment
- lack of training

Make the point that this course is designed not only to try and address these issues but to help convince people that there is something meaningful and worthwhile to buy into. We do this as trainers by emphasising the 'Why' and not just the 'How'!

SLIDE 4 – THE 'COST' OF WORKPLACE INJURY



Facts, figures and statistics can often be open to interpretation and can sometimes be very misleading. We may not take into consideration that the figures or study published may be flawed in many ways we take out of the literature what we want to. For instance, a chocolate bar may be 90% fat free, which sounds far better than saying "this product contains 10% fat".

The statistics shown are from the HSE health and safety statistics annual report for Great Britain and the *Labour Force Survey* statistics, which are reliable sources.

Training Query: You may want to put some of the statistics into context.

Ask you delegates how many people have every played the lottery? Then ask them how many times their mind has been occupied thinking about what that lottery win might feel like. Statistically they have a 1 in 45 million chance of matching all 6 numbers and winning the jackpot. They have a 4 in 5 chance of suffering significant back pain at some time in their lives, but very few people have ever thought of what this might feel like or indeed what they could do to decrease their chance of this occurring.

This may have a have a little bit more of an impact to your delegates compared to saying, 80% of us will suffer with significant back pain.

Many statistics detail the cost of back pain to business and society. Hundreds of millions of pounds spent reacting to problems that have already happened. Very few studies investigate preventive measures that would save money in the future, as these can be subjective and difficult to calculate.

There are groups of people in our culture who tend to use good practice when lifting. These are professionally trained athletes, people who have (or are) suffering with back pain, and children. Athletes have trained their mind to switch on the most efficient muscles through repeating the same tasks again and again until new habits have been formed. People suffering pain tend to adopt better postures when sitting, lifting, pushing and pulling because less-safe techniques may aggravate the existing condition. However, children use effective lifting and lowering innately.

SLIDES 5 & 6 – THE 'COST' OF WORKPLACE INJURY; FOCUS ON MUSCULOSKELETAL DISORDERS



Training Query: Ask your group to observe the above slides and highlight the prevalence of manual handling accidents.

You can ask your delegates beforehand what sort of figures they would expect and which area they think has the highest accident rate.

Note that 'Handling, lifting or carrying' is the most common cause of injury (non-fatal work-related). Earlier in the course you have described what the consequences of a back pain/chronic injury might be. Ask your delegates. "What would they do if they owned a business and saw that the most common cause of injury to their workforce was due to manual handling activities?"

A reasonable answer would be to "invest in this area". First and foremost, to prevent injuries in the workplace, but also to save money over the longer term. Whenever there are injuries, there is a related loss of money/increase in costs to a business. For example:

- Sickness absence costs & lost productivity
- Cost of staff replacement
- Decrease in efficiency
- Problems in quality control
- Risk of litigation
- Risk of bad publicity
- Increased insurance costs

Training Query: Ask your group to observe the above slides and noted the pie chart related to the 'most common area of injury'.

When we look at the majority of people and their 'normal' lifting posture, it is pretty obvious why the 'Back' is an area that is cited as being an extremely common area for injury.

People habitually lean forward with their spine and lift with their weaker back muscles, rather than using the larger and more powerful musculature in the legs and abdomen. Looking at this very simplistically, as far as body mechanics are concerned, we lift like a crane with no counterbalance or suspension cables.





Look at the illustration above. It is obvious why cranes are not designed in this simple way. Due to the laws of physics, the crane would quickly fail where the horizontal strut meets the vertical strut.

Training Query: Ask your delegates what types of back injury are most likely if less safe manual handling technique is used.

You may find that most of your delegates will wrongly believe that a **slipped disc** is the most common injury. In fact, most back injuries incurred through manual handling activities are strains and sprains.

In an acute phase, people who are suffering with a disc injury (such as a slipped disc) may find it hard to hide the pain and will possibly find even the simplest tasks a struggle. However, people who have a minor strain tend to find it easier to carry on with things and may not show signs of distress for quite some time.

SLIDE 7 – MANUAL HANDLING OPERATIONS REGULATIONS 1992, EMPLOYERS DUTIES



The course notes appendix contains a few examples of lawsuits related to manual handling malpractice. It may be a good idea to talk through a couple of these cases with your delegates. Choose a couple of cases which highlight how both employees and employers have duties under the Manual Handling Operation Regulations 1992.

Many people are unaware of the L23 Manual Handling Operations Regulations. This is quite concerning considering they have been in effect since the 1st of January 1993. When showing this slide is would be good to explain the meaning of "Reasonably Practicable". In layman's terms it is striking a balance between the level of risk vs the cost. For example, spending money on an existing low risk task may be unnecessary. However, a high-risk task that has caused injuries in the past 12 months might warrant further investigation and possibly money spent on equipment or control measures.

SLIDE 8 – MANUAL HANDLING OPERATIONS REGULATIONS 1992, EMPLOYEES DUTIES



Try to encourage the delegates to report any foreseeable risks that they encounter on a day to day basis. This is a very good time to make sure that all of the people on your course understand the meaning of a 'near miss'. Make sure they all know who to contact and where to access the hazard report forms. Some staff often feel left out of the risk assessment process, try to give ownership to the workforce as at the end of the day they are the people who are exposed to the risks in question.

You may want to explain that safe systems of work have been devised for workers to follow, as this will place the end-user under the least risk. If people deviate or decide not to use advised equipment, who might be in the wrong if they suffer an injury?



Near Miss Safety Triangle

SLIDE 9 - RISK ASSESSMENT FILTER



The diagram in this slide is often misunderstood. Many people believe this diagram represents weight limits. This diagram is a risk assessment filter according to the schedule in the Manual Handling Operation Regulations 1992.

The risk assessment filter:

- Is based partly on data in published scientific literature and partly on accumulated practical experience of assessing risks from manual handling.
- Are guideline figures being pragmatic, tried and tested; they are not based on any precise scientific formulae.
- Intention is to set out an approximate boundary within which the load is unlikely to create a risk of injury sufficient to warrant a detailed assessment.

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.

It must also be noted that repetition, team-lifting and twisting have further reductions to the filter's figures. For example, if a male is lifting at a repetition rate of 12 times per minute. The guideline figures should be reduced by 80%.

As discussed earlier, employees should report any near misses/risk factors. If employees have an understanding of the filter, they may be able bring high-risk areas to the attention of a supervisor or manager.

SLIDE 10 – PUSHING OR PULLING STATIC LOADS GUIDANCE



This slide provides the recommended pushing or pulling loads guidance figures. These figures for stopping/starting a load and for keeping a load in motion are provided in the Health and Safety Executive guidance booklet L23 "Manual Handling Operations Regulations 1992 - Guidance on Regulations". [www.hse.gov.uk/pubns/books/l23.htm]

SLIDE 11 – MECHANISM OF INJURY



You will probably have known someone who has received a sudden injury when playing sport, or simply slipped on a wet floor and injured their back. A sudden loading on vulnerable tissue may exceed the 'failure tolerance' (or strength of the tissue) resulting in anything from a minor tissue irritation to a fractured ankle. Preventative measures such as following the appropriate systems of work, wearing PPE, etc. will no doubt help reduce the risk of the accidental injuries we may be exposed to.

There is evidence however, to suggest that the majority of musculoskeletal disorders (MSDs) are due to an accumulation of actions rather than from any one single incident or event. The single action of a task may be relatively harmless e.g. loading cans onto a supermarket shelf for example. The cumulative effect of repeating this task over a long period of time - often weeks, months or years however may lead to a cumulative strain injury.

CUMULATIVE INJURY & CUMULATIVE STRAIN

Cumulative strain is defined as the "progressive degeneration or stiffening of body and muscle tissue due to habitual excessive or prolonged exertion or loading".

- Over-exertion injuries tend to be more sudden in nature and are often caused by a one-off event.
- Cumulative injuries can be built up over a long period of time.

Training Exercise: Ask the group what sort of activities in their day to day lives might contribute to cumulative strain. Then by using the white board draw a representation of the following diagram:



Postural abuse such as repeated stooping, twisting and over-stretching as well as poor seated position can all contribute to cumulative strain over time.

This is sometimes a hard concept to get across to the younger group members in your group who have possibly never had to deal with musculoskeletal injuries. However older members in the group may be all too familiar with the theory you have discussed. Ask your group if they have had any experiences that may be related to cumulative strain.

SLIDE 12 - THE SPINE



Training Exercise: Ask your group where they experience most of their pain and discomfort.

If you have a model of the spine, you could ask them to pin-point present or past discomfit by coming up and placing a small sticker on the spine which identifies the site of the problem area.

The results of this exercise are often fairly predictable. If you were to stand in one spot in the workplace and simply observe people for long enough, you would soon realise that if they do experience pain they tend to experience it in one of two places. For most people the primary site will be the lower back, while the base of the neck and shoulder girdle come in a close second (usually on the side that is most dominant for that individual).

If you ask your colleagues why these two areas tend to be a problem and what sort of stresses may contribute to the pain they are feeling, I am sure they will be quick enough to suggest a variety of reasons – hopefully factors relating to both handling and prolonged seating concerns (both home and work-related).

Of course, staff will report difficulties in other areas of the body e.g. knee or wrist problems, but an awareness of the spine is a good place to start given its significance in relation to postural concerns and its relevance regarding reportable injuries.

Training Query: It is also useful to look more closely at the mechanics of the lumbar spine as its structure and positioning may have implications for other areas of the anatomy e.g. the neck and arms. Ask the group if there is anything about the lower part of the lumbar spine that they think makes it particularly prone to injury?

It is important to understand the mechanisms of injuries if we want to avoid damage to the musculoskeletal system. Most of us probably understand that if we lift something that is too heavy, we are at risk of exceeding the strength of our tissues and injury may result. However, you must bear in mind that the load does not have to be heavy.

your lever arm (3 inches / 8 cm) (15 inches / 40 cm) the fulcrum

We often do not appreciate the fact that our own body weight and/or the positions we adopt

may also compromise the strength of our muscles, e.g. think about the risk of overstretching when lifting the shopping out of the boot of your car. In this case it is not uncommon to suffer an overexertion injury in the lower back due to the leverage involved, as well as the physical insufficiency of the over-stretched muscles.

Over-exertion injuries, therefore, can be avoided by knowing one's capacity, assessing the loads lifted, assessing the environments you are lifting in and asking for help and/or using equipment. It could be argued, of course, that the risk of over-exertion injuries has decreased given increased awareness and better H&S management over the years. However, we still need to be mindful of the dangers, as they may still contribute to our overall risk profile.

Another factor behind why the lower back is such a 'hotspot' for pain/discomfort are the mechanics in this area. The large fused triangular bone in the base of the spine is called the sacrum. This slots inbetween the pelvis (hip bones) creating a very strong yet rigid joint supported by lots of soft tissues called ligaments. Above this very rigid base is your last movable segment of the spine sitting on top of your last intervertebral disc. In layman's terms you have a relatively fixed base with a wobbly/moveable segment above. If you have a component in your car that is fixed with a moveable segment adjoined, this may be prone to fail.

If we load this last segment correctly (i.e. use a safer lifting posture) it will be far less likely to fail due to the load transferred in an equal plane across this segment. However, we tend to stoop and twist when lifting, and we often sit poorly for extended periods of time.

Slides 13 to 17 - Spinal anatomy



Sandwiched between the vertebrae are the discs. The main functions of the intervertebral discs are:

- to provide shock absorption
- to provide flexibility of the spine.

Spinal discs act like cushions; damping the forces produced when walking, jumping, sitting, etc. Discs are so firmly adhered to the vertebrae above and below that they do not simply "slip". A '*leaking disc*' would be slightly more accurate way of describing what medical professionals call a 'prolapsed disc'.

Discs are composed of toothpaste consistency in the centre called the nucleus pulposus and are surrounded by rings of tough fibrous tissue and cartilage. They have little blood supply and therefore take a long time to heal if they become damaged.

Discs obtain their nutrition by sucking in nutrients when pressure is removed (usually at night) then expelling waste when compressed during daily activities. This leads to the expansion and shrinking of the disc through a typical 24-hour period. In fact, you are 1.7 - 2.4cm taller in the morning than when you go to bed. The size of the discs increases further down the spine. This increase in size is necessary since each disc must support all the weight of the body above including any load that may be carried.

Discs rarely get damaged by a single action but are more commonly susceptible to stresses caused by twisting and stooping actions. You can relate this back to cumulative strain discussed earlier in the session.

- 1. Tiny microscopic tears appear in the fibres of cartilage which on their own are very insignificant, but when many of these tears build up over several years, it can create cracks which allow the gel-like nucleus to leak through.
- 2. This can progress over time without us feeling pain or discomfort, due to the lack of nerves in the inner fibres of the disc.
- 3. If these tears continue, they will cause further weakening of the disc, which can allow the nucleus to migrate out from the disc structure possibly onto a spinal nerve. This is referred to as a disc prolapse or slipped disc.

If we keep the spine in a neutral position when we lift with a safer posture, the discs will also be loaded axially where they are very strong. Another way to illustrate this is by using an egg. You will not break an egg by loading it through the north and south poles. Just like your discs, they are very strong in this vector. However, if you load you load an egg in other vectors it is much weaker. Again, very much like your discs, load them off centre and we run the risk of tiny micro-tears occurring. On their own these are quite insignificant, but the cumulative effect built up over many years, can develop in to a serious disc injury.

Nerves

The spine encloses and protects the spinal cord which runs down the spinal canal from the brain. Nerves arise from the spinal cord and pass out between each pair of vertebrae. Once they have left the spine, the nerves branch out and supply all the tissues in their area, particularly the muscles. They also receive information from the joints, skin, tendons and muscles.

The nervous system is made up of millions of nerve fibres which transmit electrical impulses to and from the brain, connecting it with the rest of the body. When the nerve is irritated the effects can be felt along the length of the nerve. In cases in the low back, this can be all the way down to the foot and is known as Sciatica. In the neck irritated nerves can cause symptoms in the arm or hand.



Sketch a diagram (like the one below) on the whiteboard, showing how spinal discs can be progressively damaged by repeated unsafe manual handling posture.



SLIDES 18 – MUSCLES, TENDONS & LIGAMENTS



Muscles in your body come in various shapes and sizes. Muscles are made up of bundles of fibre that receive messages from the brain which cause them to contract or relax, resulting in the movement of a joint. Muscles are supplied with a good blood supply which means they tend to heal quicker than other tissues such as ligaments and discs.

Some of your staff may be aware that the skeleton forms the structure to which the soft tissues can attach i.e. muscles, tendons, ligaments etc. If it helps, we can visualise the spine as an articulated tent pole – the muscles that attach to the bones via the tendons are analogous to the guy ropes which can both stabilise the spine as well as allow it to move. Ligaments, of course, provide both joint stability as well as an end-range for movement (we often compare the ligaments to 'rubber-bands' which wrap around a joint).

Although the most common type of MSD reported is simple mechanical back pain i.e. strains and sprains, it is also worth emphasising that the back is not a fragile structure and that to do serious harm to it often takes a lot of dedicated effort over a considerable period of time.

Training Query: Ask your delegates whether they know which tissues are typically strained and which tissues typically sprained? You can ask them for their own experiences of injury in this regard.

In this section it is good to relate the anatomy to postures that are adopted throughout our daily lives, NOT just during work hours. As the task showed earlier, bad habits are the biggest battle we face when trying to adopt better posture. These bad habits will not change overnight, the more we use safer handling techniques, the more natural it becomes. It's a little bit like driving. When you were first learning, I'm sure you were thinking of checking your mirrors and getting the biting point of your clutch. I doubt you even think about it now because your brain has learned this manoeuvre and is carrying it out subconsciously.

So, when we lift inefficiently, our brain switches on the low back muscles. We need to try to change the brain's pathway so it lowers through the knees and relies in the more powerful leg and Abdominal muscles.

Your delegates may understand that over-stretching and then loading a muscle may increase the chance of a muscle strain through over exertion. If you relate this to a stooping action, calf muscles, hamstrings, and low back muscles are all in a stretched position and the larger quadriceps, gluts and core are not being utilised. If we use a semi-squat you will take the loading away from the low back and put the strain through the more powerful legs and core muscles. If you relate this to *the leverage effect*, it's a bit of a no-brainer. Stooping has a long lever with small lower back muscles, whereas a semi-squat uses a short lever with the more powerful leg and core muscles.

SLIDES 19, 20 & 21 – THE LEVERAGE EFFECT



Training Exercise: - Lifting with top-heavy movement

When most people lift an object off the floor, they use a top-heavy movement which involves stooping. When bending over, the distance between the hips and the upper body is about 15 inches / 40 cm, so:

• The lever arm close to the load is about 15 inches / 40 cm long.



This gives you enough information to begin the calculation.

Proceed by:

- dividing the lengths of the lever arms
- conclude that the body is working at a 5 to 1 disadvantage.

However, when lifting an object using this stooping technique, we must also consider the weight of your torso, arms and head - that is also a load that must also be lifted, along with the load that you are trying to pick up. This additional upper body weight may be 50kg (8 stone) for an average person.

Lifting heavy loads - Clearly the leverage effect will have even greater impact when you are lifting a heavy load using the incorrect technique of top-heavy movement.

Consider a load of 25kg (4 stone). To calculate the effort you would need to lift such a load using top-heavy movement:

• Calculate the total load weight: Load weight + Upper body weight = 25kg + 50kg = 75kg (12 stone)

• Remember that you are working at a 5 to 1 disadvantage

• Multiply the total weight by the disadvantage - Weight x Disadvantage =75kg x 5 = 375kg (60 stone).

This means that to lift a load of 25kg (4 stone) using less efficient techniques you would need a total effort of 375 kg (60 stone). The muscles in your lower back will bear this extra effort. It is evident that the leverage effect greatly increases the risk of damaging your back.

SLIDE 22 – CAUSES OF BACK PAIN



Discuss the varied causes of back pain. Explain that certain people (or certain jobs) are more likely to be exposed to the causes of back pain than other people (or jobs). You may want this to be a group brainstorming session, where you can invite the delegates to share their suggestions and experiences.

SLIDE 23 – CATEGORIES OF ASSESSMENT



Many injuries can be prevented by carrying out risk assessments. Unfortunately, many risk assessments are carried out reactively (after the injury), rather than proactively (preventatively).

If you work at a computer you may be classed as a DSE user and should have carried out a risk assessment as a preventative measure, and to highlight any existing problems. You should let the group know your sites policy regarding this matter.

This session has not been designed to look at risk assessment in detail, however many injuries can be prevented by stopping and thinking the job though before commencing the task. Is there a better way? Can I avoid altogether by using manual handling equipment (MHE)? Am I capable? These are just a few things that employees should be considering before they start a task.

Training Exercise: Draw a picture of a box and a trolley in the centre of the whiteboard/flipchart. Split the group in to groups of 2 or 3 people. Ask the groups think of 25 things they should think about before lifting of pushing/pulling the load.

Now draw "T" in the left top corner of the page, "I" in right top corner, "L" in left bottom corner and "E" in bottom right corner. Populate each of the letters by asking the group to call out ideas. For instance, if someone called out weight of the item, then you would write weight next to "L". If someone called out capability, then you would write this next to "I", and so on

The purpose of this task is to realise how simple a manual handling risk assessment is, and to reinforce the 4 main areas of assessment; Task, Individual, Load & Environment.

SLIDES 24 & 25 – S.T.O.P. AND THE SEMI SQUAT LIFT



Training Query: Ask you group what might be happening to groups of muscles in each of the slides above?

Your delegates may understand that over-stretching and then loading a muscle may increase the chance of a muscle strain through over exertion. If you relate this to the scenario which may occur if you assume a stooped posture ('bad' lifting posture), then you can imagine that your calf muscles, hamstrings, and low back muscles are all in a stretched position and the larger quadriceps, gluts and core muscles are not being utilised.

If you use the semi-squat lifting technique you will drastically reduce the loading on your lower back, and instead put that strain through your more powerful legs and core muscles. If you relate this to the leverage effect we looked at earlier, it's a no-brainer. A 'stoop posture' has a long lever with small lower back muscles, whereas a semi-squat posture uses a short lever with the more powerful leg and core muscles.

Training Exercise: Ask the delegates to stand and place their hands on the muscles of the lower back. Ask them to feel what happens to the muscles as they gently move the trunk forwards and backwards. Ask them to determine how far forward the trunk needs to be before the muscles are activated? Warn them that it is not very far.

Whenever we hold something in front of us or bend forward these muscles are activated. Ask what the ligaments of the back will be doing when we bend forward. Ask what implications this may have if we over-exert ourselves in these positions or hold these positions for long periods of time.

You can also ask them what they think the difference is between a full stoop and a slumped seating position with relation to the mechanics of the lower back.

SLIDE 27 – TEAM LIFTING



SLIDE 28 – PUSHING AND PULLING



BOOK 1 REFERENCES

- Gravells, A. 2008. Prepare to teach in lifelong learning sector. United Kingdom. Learning Matters Ltd.
- <u>Pain.</u> 1992 Jul;50(1):5-13. The treatment of depression in chronic low back pain: review and recommendations. <u>Sullivan MJ¹, Reesor K</u>, <u>Mikail S</u>, <u>Fisher R</u>.
- The British Chiropractic Association
- HSE Health and safety statistics annual report for Great Britain
- Manual Handling Operations Regulations 1992 (as amended)

INTRODUCTION

KEY OUTCOMES

At the end of this section, you will:

- be aware of your legal obligations as a trainer and how to fulfil them
- know how to prepare and deliver a safe and effective training course in practical handling skills.

Book Two addresses how to apply the principles of safer dynamic handling, to a variety of different handling procedures and situations.

You need to prepare carefully before running a training course and you need to be aware of the implications and consequences your actions may have.

COURSE PRACTICAL PREPARATION

Running a successful handling training course requires a substantial amount of organisation and preparation and it is essential that you begin planning well in advance. Below is an outline of the most important points to consider. Make sure that you also take your organisation's specific requirements and logistical needs into account.

BEFORE YOU TRAIN

Provide information for your prospective trainees containing:

- suggestions for appropriate clothing (e.g. comfortable, loose-fitting, non-restrictive clothing, trousers if possible, etc.)
- a form notifying them that practical sessions are part of the course and asking them to inform you of any medical conditions which might affect their ability to take part
- advice on items to bring along (pen, paper, etc.) if not provided.

COURSE SIZE

For a course to be effective, Osteopaths for Industry recommends your training sessions consist of at least 6 and at most 10 delegates. Having too many delegates reduces involvement and having too few limits the amount of interaction within the group. In principle, you need to ensure that your approach to training gives everyone a chance to take part, practice all exercises and have their performance checked.

FACILITIES AND EQUIPMENT

As you will be performing practical demonstrations and group exercises during your training course, your training room needs to fulfil certain criteria:

- enough space for practical sessions and demonstrations
- good visibility of the demonstration area for all your delegates
- seating and writing surfaces for your delegates
- space for equipment such as a data projector, flip-chart, etc.
- facilities for preparing or serving refreshments during breaks.

The practical sessions require objects such as:

- a light-weight plastic crate with inset handles, approximate dimensions 44cmx37cmx30cm
- a medium sized, light box (about 21cmx21cmx30cm and up to 3kg, roughly equivalent to a box containing one ream of photocopying paper) (can also be used in the plastic crate)
- a piece of rope
- a spring gauge (if available).

Be Aware: Never use heavy loads in practical sessions. People might be performing this technique for the first time. You should be more interested in the technique they perform rather than the weight that they are lifting.

You should also consider:

- giving your delegates pens and note-paper, or at least keeping an emergency supply at hand
- providing delegate hand-outs at the end of the course, such as OFI's optional delegate toolkit handouts, stretching cards or manual handling jogger cards.

For a complete listing of required equipment, see Appendix A.

TRAINING GUIDELINES

For manual handling training to be effective a significant proportion of your course will need to concentrate on practical teaching of new skills and techniques. This will involve demonstrations and supervised practice sessions for the attendees.

Note: Practical sessions are challenging. Your delegates will see you as the authority in manual handling and expect you to be fully competent and confident in your theory and practical application. You should never train them in any techniques or areas that you are unsure of. Always practice your techniques well in advance of the course, especially if you have not trained for some time. If you are asked a question you cannot answer, promise to find out and get back to them.

Be Aware: Remember, your delegates will be watching your every move once you tell them about dynamic handling and its applications. To be a successful trainer, dynamic handling must become second nature to you in all activities, at home and at work. The golden rule is not to be caught out performing a top-heavy movement EVER. You will lose your credibility.

There are some very important key points you must follow during your training courses (also see *Legal Obligations* section).

SUPERVISION

You must always:

- supervise practical sessions and NEVER leave the training room when delegates are practising techniques
- watch your delegates and listen to them during exercises
- correct any less safe handling techniques IMMEDIATELY, as they may be harmful and could lead to injury
- talk through less efficient techniques both with the individual in question and the entire group
- avoid negativity some people can become quite self-conscious in group situations. Use mistakes constructively
- explain the reasons behind any comments you make.

PRACTICAL

You need to:

- ask your group directly before the training if any of them have any problems which may be affected by them practising handling techniques (knee or back problems, etc.)
- avoid forcing any of your trainees to perform a technique
- if a delegate informs you that they are pregnant, guidance must be sought from the employer before any physical training is undertaken. Check that they are not being expected to fulfil a physical role that may be dangerous during pregnancy.

Note: Make sure that no employees slip through the net. Anyone who cannot participate in manual handling training should be re-scheduled for a future course. You should also discuss the suitability of their present work to ensure that they are not subjected to health risks in the meantime.

DUAL OR TEAM HANDLING

In practical sessions involving team handling, you must consider the following points in order to avoid accidents or placing too much strain on one member of the team:

- match partners in height and build
- make sure all team members understand what is required, what commands will be used, and when to begin the manoeuvre.

Note: These are general guidelines only. Please refer to the section Dual and team lifting for complete instructions on the subject.

LEGAL OBLIGATIONS

APPROPRIATE INSTRUCTION

All handling trainers are legally required to provide appropriate instruction and supervision throughout their training courses. Apart from providing your delegates with correct information, you need to:

- always assess the experience of your training group before you begin training and never assume any knowledge
- be safe if your trainees say that they are experienced, always start off by revising basic principles and use this to test their actual knowledge.

Note: You will be surprised how many of your delegates say they know about safer handling techniques but when put to the test their knowledge is often rudimentary, or even wrong. Handling operations can carry a high risk of injury and therefore it is important to check existing knowledge before starting each course.

DISCLAIMERS

You may want to ask your delegates to sign a disclaimer before attending the course. However, you must be aware that such a document is rendered ineffective under the Unfair Contract Terms Act 1977 in cases of alleged negligence and generally has very limited legal value.

DELEGATE ASSESSMENT

Delegate assessment can be done in several ways. For example, you can:

- evaluate practical exercises
- ask questions about specific items of your training sessions
- set written or multiple-choice exams (which can be called 'written course appreciation' to reduce pressure to perform).

Combining several different assessment techniques usually produces the most accurate result.

COURSE EVALUATION

It is extremely valuable for you to get some feedback from your delegates. Perhaps the easiest method to arrange this, which also allows your delegates to put their views freely, is to:

• hand out evaluation forms, giving multiple choice answers such as 'very good', 'average', etc. to key questions

You should use the course evaluations constructively to improve your future training sessions.

DYNAMIC LIFTING/HANDLING

KEY SUBJECT AREAS

- Top heavy movement
- Dynamic lifting/handling
- Semi-squat technique
- Practising safer handling techniques
- Problematic handling situations.

KEY OUTCOMES

By the end of this section, your delegates will be able to:

- describe the term 'top heavy movement'
- state the damage caused by top heavy movement
- demonstrate an understanding of the concept of 'dynamic handling' and assessment based on the load, individual, task and environment
- demonstrate an understanding of the term 'semi-squat' and its application to handling techniques
- describe the implications of clothing restrictions, back pain and knee problems on good handling techniques
- practice using the 'dynamic handling' approach to manual handling.

Note: Make sure that you have enough time set aside for the group practical sessions at the end of this section. This may be the first time that delegates have encountered dynamic handling and they will need time in order to learn the techniques properly.

Movement plays a crucial role in everyday life and as such is usually performed as an unconscious, automatic activity. We only stop and think about our actions when we experience pain or do not manage to perform what we set out to do.

Note: Many of your delegates will find it difficult to change the habits of a lifetime, such as topheavy movement patterns. You need to work with them to make sure that they do not return to their bad habits once they leave the training room.

Be Aware: Since dynamic lifting emphasizes the use of the leg muscles, delegates might experience a few aches at first, especially in the thigh muscles, while getting used to the new movements in the practical exercises.

MOVEMENT PATTERNS

THE CLASSIC 'UNSAFE' APPROACH - TOP HEAVY MOVEMENT

The term 'top heavy movement' describes the classic movement pattern people generally use when lifting objects.

The key points of top heavy movement are:

- Stoop
- Twist
- **O**ver-stretch
- Parallel hands and feet.

Question: What are the dangers associated with this movement?

Answer: It greatly reduces stability and provides no power for lifting.

DYNAMIC LIFTING/HANDLING DESCRIBED

As discussed in your theory session, 'Dynamic lifting' is a movement pattern which minimises the potential for stress and strain to the low back. It makes full use of the strong leg muscles and provides control, stability and power, all of which are essential when lifting a load of any kind. It also recognises that manual handling cannot be reduced to the teaching of a set technique, which will work for every individual all of the time. Handling operations that require lifting are often dynamic situations, which require the individual to adapt in a variety of ways and not in a prescriptive fashion. Dynamic lifting is therefore an approach based on assessment of the risk factors involved in any given handling operation. As discussed in the slide titled 'Categories of assessment' they divided into four categories:

- Task
- Individual
- Load
- Environment

Dynamic lifting emphasises 'adaptability'. Correct assessment will help an individual adapt to differing handling tasks while taking into consideration their own capability. the lifting/handling technique that is utilized in dynamic handling is the semi-squat.

In the world of manual handling training an enormous amount of effort has gone into which techniques are the safer to teach and use. There are any number of research projects, trials that define each variation technique. This can make it difficult for the manual handling trainer to decide what is correct to teach. It is perhaps more realistic to avoid over emphasis on what an individual expert or team says is correct technique and to focus more on the abilities of the individual doing the technique.

Be Aware: Always tell the group that if they are concerned for ANY REASON about completing any technique, they should inform you immediately.

THE SEMI SQUAT TECHNIQUE DESCRIBED

The semi-squat technique is a lift which resembles the technique used by a weightlifter, where the knees and hips are flexed with the back straight but where it is no longer upright.

In the weightlifter's approach the arms are positioned on the outside of the lifter's legs. The dynamic handling approach adapts the semi-squat technique by positioning the arms inside the legs when lifting. This ensures that the lifter will remain as close as possible to the load while lifting and thereby reducing the leverage effect on the lower back and arms shown earlier in the session.



Note: The various advantages of the semi-squat as a lifting technique should be emphasized and the trainer should familiarise themselves with them. For example, the semi-squat technique is generally considered a useful lift in working environments where objects are lifted in the midrange that is, just below the knees to around shoulder height. If the object does not have handles and needs to be lifted directly from the floor, adaptations to the semi-squat may need to be considered. See adaptations to the semi-squat.

There are seven important key points associated with the semi-squat technique:

- assess the load
- feet
- knees
- hips/back
- neck and head
- grip
- hold load close.

Note: It has been seen through experience of teaching manual handling training that the semisquat technique can be difficult to teach. This is often because the object we choose as a lifting aid (i.e. a light-weight box) is usually too challenging given the tightness of most people's legs and hips. It has been found that a slightly wider, high handled box or crate is more useful for those practicing semi-squat for the first time. Once established in the principles of the semi-squat technique a standard light weight box can then be introduced. (See Introduction to Book Two for guidelines on the kind of box to use).

1. Assess the load

Before any manual handling event, a quick assessment should be completed considering the load, task, environment and the individual themselves.

Question: Ask the group how they would safely test the weight of a box if it wasn't marked. Ask one of the group to demonstrate how they would do this.

Answer: The correct and safe approach is to carefully tap the side of the box with your foot to determine what kind of weight you are dealing with.

Note: You may find that some of your trainees will stoop over to test the weight of the box with their hands – the classic top-heavy movement!

Demonstrate: Tap the side of the box with your foot. Then show the alternative of using the semi-squat technique to lower yourself and testing the object by hand.

Highlight: It can be just as dangerous to use too much effort in lifting a light load as it is to use too little force with a heavy load.

Note: Assessment and preparation before lifting are essential! It is interesting to note that in the general work environment a worker will be more likely to use safer handling technique when faced with a heavier load. In other words, the musculoskeletal system is 'primed and ready'. Not only is it more likely that the worker will have considered the load, individual, task and environment, but the actual lift will also be undertaken in a more controlled fashion. It has been recognised from clinical practice that people will often hurt themselves with fairly insignificant loads where little assessment or preparation has been undertaken, and where the load is lifted in a quick and uncontrolled fashion.

Discuss: There is no such thing as a light load if lifting using unsafe technique. (See *the Leverage Effect*).

Slide – The semi squat lift



Use this slide to talk through the correct positioning of the feet. The feet are positioned in a wide slightly asymmetric stance either side of the object. This posture can allow for larger loads to be handled and provides both power and stability when lifting an object.

Explain: If the trunk is positioned 'square on' to the load the legs can be placed either side of the object. This enables the person to avoid twisting the trunk and to get close to the load, thereby reducing the leverage effect on the lower back and shoulders (see The Leverage Effect).

Highlight: With the wider asymmetric stance both heels should remain flat on the ground throughout the technique. This will increase general stability.

Question: What is the reason for one or both heels to be raised during lifting?

Answer: General lack of flexibility and shortening of the muscle-fibres of the calf muscles through prolonged seated posture or wearing of high-heeled shoes.

3. KNEES

Relax the knees and let them flex but not beyond 90°.

Demonstrate: Take up the wide asymmetric stance and demonstrate the initial knee flexed position.

Note:

- With both heels on the floor the stability of the technique has increased
- With the knees only flexed to 90° the technique will be more comfortable for those with knee problems.

Be Aware: Be aware that some trainees will be unable to flex their knees sufficiently particularly when lifting directly from the floor. Never ask an individual to bend their knees beyond what they feel is comfortable. See adaptations to the semi-squat.

4. Васк

This can now be straight but no longer upright. The movement must come from the hip joints.

Demonstrate: Show the group movement of the hip joints and how the back can remain straight but no longer upright

Explain: How the spine can only remain straight if the hip joints are flexed.

- the semi-squat technique requires the knees to bend less to reduce the pressure of over flexing. The distance one can reach towards the load is then reduced. This is compensated by flexing the hip joints which increases the individual's reach toward the lower load.
- this will give those with knee problems a more comfortable posture.

Practical: One technique used to demonstrate the difference between the straight and stooped back is the bow. Have the group stand. Ask them to place either hand in the arch of their low back and slouch or stoop forward. They will feel a loss of their low back curve. This will demonstrate a no longer straight/no longer upright spine. Then ask the group to imitate a martial art bow where all the movement comes from the hip joints. As they bow forward they will feel the low back retain its curve and the back will be straight but no longer upright.

Be Aware: Be careful if you decide to demonstrate the stooped posture for the reasons previously discussed.

Note: Some of the group may find it very difficult to keep their back straight during this practical and may need more specific guidance and advice.

- when keeping a straight but no longer upright spine, they will feel a deep pulling in the back of the legs or the hamstring muscles. This will indicate they are doing the technique correctly. The pulling will release immediately when the individual bends their knees.
- this posture will look very similar to the classical weight-lifters stance. A less-safe weightlifting technique is seen when the lifter cannot maintain a straight back and slouches.

Gem: If you want to see what muscles are doing most of the work for a weightlifter, look at the size of their leg muscles.

Question: Is your back under strain when lifting using the semi-squat technique?

Answer: If the technique is carried out correctly, no, the back muscles will be used to support and stabilised the back, not do the lift. That is done by the legs.

5. NECK AND HEAD

When attempting to lift a static object, it is only necessary to check where the load is to start with. Once your feet are positioned correctly in relation to the object, do not:

- look down again, as this tightens the muscles in the back and neck and will encourage the rest of the body into a stooping movement
- look around to see where you are going to go next, as this twists the back and can damage the discs.

Be aware: Be careful if you decide to demonstrate these less-safe movements - consider only describing them.

6. GRIP

Use an asymmetric grip for maximum control of the load and a comfortable hold.

Demonstrate: Show your trainees the asymmetric grip on the box and talk through the key points as you go. Repeat this two or three times to drive the idea home.

Note: The semi-squat lift is especially useful for lifting objects with slightly raised handles. For example, crates, trays, boxes with higher handles or cases.

Often manual handling addresses only those concerns associated with the lower back. It has to be recognised that other areas of the musculoskeletal system are also at risk from poor handling. Accordingly, a dynamic handling approach will emphasize the movement patterns of the whole person and not isolated regions. In some workplace contexts injury to the neck and shoulder girdles are just as significant as those injuries associated with the lower back.

7. HOLD LOAD CLOSE

It is important to hold the load close to your body at all times and keep your arms inside the knees when handling a load. In this way you:

- reduce the leverage effect by keeping the load's centre of gravity close to your body
- avoid reaching over your legs, which makes you over-stretch and possibly twist your back, and reduces balance.

Demonstrate: Demonstrate this part of the semi-squat lift and talk through the key points at the same time.

Question: Why is it better to hold the load close to the body?

Answer: It decreases the leverage effect and increases balance. (See Leverage Effect)

SUMMARY

All of the factors, employed together, will enable the individual to get as close as possible to the load/task to almost incorporate it into one's own centre of gravity. You can now have a checklist with which movement patterns and their efficiency may be assessed against.

STANDING UP

Standing up is practically the exact reverse of using the semi-squat to lower yourself to the load. You must:

- hold the load in close
- keep your arms on the inside of your legs
- keep your back straight but no longer upright
- keep your head upright, with the eyes looking forward
- use the leg muscles to power up from the semi-squatting position in one fluid movement
- always focus on keeping the back straight throughout the technique.

Discuss: Observe martial artists whose technique and patterns of movement are based on moving the whole body rather than an isolated part. One of the consequences of top heavy movement is the over-emphasis we put on the power that comes from the arms and upper back. This increases the risk of injury for a variety of reasons. Can you imagine a boxer using top heavy movement patterns successfully? The emphasis in the martial arts is often stability and power as well as on the speed and efficiency of technique. The movement patterns in dynamic lifting should also reflect some of those concerns and should emphasize the person moving as a whole and not as a series of disassociated parts.

Note: Having worked through each of the basic variations of the safer handling technique, it is now time to practice. Trainees should feel comfortable choosing whichever technique feels more suited to them. Throughout the practical sessions good technique should be congratulated and any slight errors gently corrected with encouragement for good aspects of their technique.

What follows is an example of a practical session used to further practice techniques.



Practical: Group exercises to practice semi-squat:

Get each delegate in turn to lift a box off the floor, walk a short distance to a chair and place the box on the chair and then reverse the process. Ask the rest of the group to comment on the technique used.

Split the group into two and have the delegates stand facing each other across the room at about 4 metres apart. Have the first delegate lift a box off the floor, carry it over to the person facing them and place the box back on the floor. They then move to the end of the line. The exercise continues in this fashion with the box being moved between the two groups.

Repeat the exercise until their chosen good lifting technique becomes more natural and fluid.

You can time the operation for the whole group and set time limits to speed up the process of adapting to the new movement pattern.

Warning - Watch out for:

- 'bum-lift' this lifting technique that was traditional to manual handling. As a technique it still has its uses but is now considered energy inefficient and can place stress on the knees. Make sure trainees power up from the ground using their strong leg muscles.
- 'frog-lift' make sure that trainees use the asymmetric stance
- sloppy technique developing under time constraints
- trainees looking down or around when they attempt a lift
- loads not being held close to the body or arms not being kept inside the knees
- incorrect use of grip such as 'flat hands on side of load'.

ADAPTATIONS TO THE SEMI-SQUAT TECHNIQUE

Lifting directly from the floor can sometimes be challenging for people who have limited mobility or reduced flexibility. This is especially the case when considering objects that may not have handles. If the heels lift or the lower back bends excessively when they attempt such a lift, then it may be useful to consider adapting the semi-squat.

Firstly, check the delegates foot positioning. It is often the case the delegates will stand too far from the object with their feet positioned too close to each other. Widening the stance and getting closer to the object will often improve the technique and should result in a more comfortable lift. At all times, check that the delegate is comfortable with the positioning and not experiencing any undue strain in the back or lower limbs.



If the load does not have handles, it is sometimes easier to get a more effective grip on the object by tilting the load away from you before you lift. This brings the near side of the object up to the delegate. Reorienting the object in this way limits the need for the delegates to come down so far as well as facilitating a better grip.

Be Aware: For objects that are too heavy or awkward to tilt or re-orientate in this way, reviewing the manual handling risk assessment may be necessary. Raising the level of the object to be lifted by using equipment or eliminating the need to lift altogether may need to be considered if the load poses unacceptable risks to the handler due to its weight or size.

Where a particularly low lift is required, some individuals may need to bring one foot backwards before lifting. This position puts the delegate in a more asymmetric posture (i.e., '10 to 2' or 10 past 2' on a clock face) and may help limit the stretch on the calf muscles by allowing the delegate to raise the back heel as they go down. Care should be taken that the delegate does not over-bend the rear knee or twist the lower back. This adaptation is only useful where the load is lifted infrequently and where the load is small and lightweight.

Be Aware: Delegates with knee problems should take care when lifting low to the ground as this can over flex the knees leading to strain and possible damage to the joints.

WORKSHOP DISCUSSION GROUPS

If appropriate, form small groups to discuss some or all of the following points and then let each group present their findings to the whole group afterwards. Visit each group in turn to help with the discussion. You should allocate about 10 minutes for this.

1. PPE PERSONAL PROTECTIVE EQUIPMENT

Discuss what is available for manual handling activities and how it affects the ability to perform dynamic handling/lifting.

2. LIFTING WHILST WEARING A SKIRT

How suitable are skirts for performing dynamic handling/lifting?

Consider mini, above the knee and full (wide) skirts.

3. BACK COMPLAINTS

If someone has a back problem, how will they tend to lift?

4. KNEE PROBLEMS

If someone has a knee problem, how could they safely adapt the original dynamic handling approach to assist them?

DUAL AND TEAM LIFTING

Recommended timing: 15 minutes

Key subject areas

- An overview of team lifting
- The dangers of team lifting
- Assessing a load's suitability
- Safer team lifting techniques.

Key outcomes

- At the end of this section, your delegates will be able to:
- list the risks associated with team lifting
- determine whether a load is suitable for team lifting
- perform a team lift safely.

INTRODUCTION TO TEAM LIFTING

Many loads are not suitable to be lifted by one person, simply because they are too heavy, large or unwieldy, for example:

- large, thin sheets of metal
- rolls of carpet
- long boxes with a handle at either end.

Using a team of two or more people to carry out a lift can often overcome the problems of dealing with large or unwieldy loads, such as the examples given above.

It is crucial that you are aware there are going to be situations where team lifting is not appropriate. Most importantly, very heavy loads may not suitable for team lifting, however tempting a (quick) solution this might seem. Instead, appropriate manual handling equipment or machinery should be used.

Discuss: Your delegates should have enough knowledge of dynamic handling training (see Introducing dynamic handling) to hold a constructive brainstorming session on a correct and safe approach to team lifting. This will encourage them to think seriously about the issues involved.

Participating in this way will stimulate your delegates and aid their learning process. Make sure that the correct approach to team lifting is understood by the whole group and summarise the main points of the discussion.



THE DANGERS OF TEAM LIFTING

The nature of the load being moved is often responsible for the dangers involved. A direct danger is that team lifting is often being used with unsuitable loads.

For example:

- too heavy a load
- unwieldy loads may be hard to grip
- the size of the load may make it difficult to manoeuvre
- incorrect timing or an unanticipated event can suddenly leave a single person bearing an excessive weight.

All of these factors:

- encourage the use of less safe handling techniques
- may lead to inefficient posture
- increase the risk of accidents.

Assessing a load's suitability

Risk assessment forms a crucial part of ensuring safety in all manual handling activities.

Any proposed dual lifting procedure requires an initial careful assessment of the task, load, environment and the capabilities of the individuals involved.

One of the most important aspects to take into account is the weight of the load. Note that:

• You cannot simply multiply the suggested weight guidance by the number of team members to obtain a new maximum weight guidance.

Instead, you must make the appropriate recommended reductions after the multiplication. These are laid out in full in Manual Handling and the law and in Appendix C. Generally speaking, when safer lifting techniques are used, they result in suggested load weights for team lifting of:

| Team Lifting | Men | Women |
|--------------|------------------|---------------------|
| 2 person | 35kg (5.5 stone) | 22.2 kg (3.5 stone) |
| 3 person | 37.5kg (6 stone) | 25kg (4 stone) |

These figures make it very clear that team lifting does not provide the answer when it comes to moving heavy loads and it should be emphasized that mechanical means should be used in such cases.

Team lifting is however very useful when a load is sufficiently light but too unwieldy to be lifted by a single person.

Nevertheless, here too a full assessment is important. You need to make sure that:

- the load has enough evenly spaced places where it can be gripped securely
- the load is not grossly unbalanced, so that one part of the team has to bear a larger proportion of the weight
- the load can be carried safely to its destination without having to be tilted
- all members of the team can see where they are going
- the destination for the load is accessible for all team members and no one needs to let go of the load first in order to make room for the passage of the load.

Be Aware: A load may not be suitable to be lifted by one or more people. Remind your delegates of their duty to report hazardous working practice. Thorough risk assessment should ensure that your delegates are not required to lift unsuitable loads.

SAFER TEAM LIFTING TECHNIQUES

Once you have ascertained that the load in question is suitable for team lifting, you should then follow the safer dynamic handling procedure for team lifting.

Slide – Team Lifting



Use this slide to talk through the points stated below.

First of all, in order to avoid placing an uneven load on one person, make sure that:

• the members of your team are of similar height, build and strength.

You then need to:

- nominate a team leader, who will issue the command to lift
- make sure that everyone understands the technique
- specify that lifting will occur on the word 'Lift' in the command "Ready, Steady, Lift"
- ensure everyone is clear about what happens once they are standing up, i.e. in which direction to move, where the load needs to go, how to put it down again, etc.

Once the technique has been discussed, all members of the team should:

- take up positions evenly spaced around the load
- adopt an asymmetric stance
- squat down using dynamic handling, with the back straight and your head upright
- grip the load securely, using the asymmetric grip wherever possible.

Your team is now ready to lift. On the command "Ready, Steady, Lift" from the team leader, everyone should:

- stand up using dynamic handling
- continue as arranged before the lift.

To set the load down again:

- the team leader issues the command "Ready, Steady, Down"
- all members of the team lower themselves using dynamic handling, until the load is resting on its destination surface
- once the load is safely in place, everyone can let go.

Practical: You can adapt any practical exercise from Introducing dynamic handling to provide experience in performing team lifts. Make sure that you choose a suitable object to use as the load, such as an empty wooden palette. You should only have one team of delegates lifting at a time, so that you can provide adequate supervision.

Be Aware: Do not carry any load once it is lifted unless all members of the team can maintain a secure grip without twisting their backs, having to walk sideways, etc. In situations where this is not possible, use the technique to lift the object and then slide a trolley or some other form of transport underneath.

PUSHING AND PULLING

Recommended timing: 40 minutes

Key subject areas

- An overview of pushing and pulling
- Common less efficient techniques to avoid
- Safer dynamic handling pushing and pulling techniques
- Practical pushing and pulling exercises.



Key outcomes

- At the end of this section, your delegates will be able to:
- identify the risks of using inefficient methods
- describe and apply safer pushing and pulling techniques.

INTRODUCTION

Although it is often tempting to push or pull objects which are too heavy to lift, the recommended weight guidelines must be considered when assessing the load. The regulations specify that you should, at most, use a force equivalent to:

- 20kg to begin pushing and pulling
- 10kg to maintain the pushing or pulling movement.

Working beyond these weight guidelines indicates to the employer that a more detailed risk assessment may be required.

Highlight: Emphasise these load limits by writing them down on the flip-chart/whiteboard. You should ask your delegates about them while doing the demonstrations and exercises in this section. It is also a good idea to have a force-meter (spring gauge) at hand to let your delegates appreciate the kind of forces you are talking about. To measure pushing forces, simply attach the gauge at the other side of the load and pull.

Note: Thorough risk assessment of the workplace should ensure that the loads your delegates encounter are safe to handle. However, in order for the members of your group to be able to intelligently use dynamic handling, it is important for them to understand what is and what is not a safe load.

In general, pushing a load is much more powerful than pulling, as your whole body is designed for forward movement. Therefore, when the situation allows, you should always opt to push rather than pull a load.

CLASSIC INEFFICIENT TECHNIQUES

As with the lifting techniques, most people use less-safe techniques when they push and pull. These are inefficient and put your back at risk.



When people push, they usually:

- place their feet wide apart, with one foot in front of the body and the other at an angle out to the side
- bend their body down and forwards, often to an almost horizontal position
- stretch out their arms and place them on the load
- use their entire body to propel the weight forward.

Compromised pulling is performed in a similar way, in that the upper body is doing most of the work and the body-weight is used to a great extent. Common less-safe techniques may involve:

- take up a wide stance sideways to the load, often with the feet pointing back towards the object
- twist the upper body so that you are half facing the load
- take hold of the rope, handle, etc. with both hands
- lean away from the load and pull with the arms and upper body.

When a rope is used, it is often wrapped around the arm for extra grip or slung over the shoulder.

Warning: The classic techniques described above may harm your back if you choose to demonstrate them. Consider using diagrams instead and do not ask delegates their idea of pushing or pulling on a heavy load, as this may be unsafe.

Disadvantages

Both classic inefficient techniques pose a safety risk specifically but not exclusively to your back, as:

- bending and reaching forward places your first point of contact with the load outside your base of support and leads to a lack of stability
- your entire body weight is supported only be the load and any sudden movement may lead to accidents
- your feet are in a position where they are very likely to slip
- your upper body must sustain the force coming from your much stronger leg muscles
- wrapping a rope around your arm when pulling cuts off circulation and, in extreme circumstances, may cause a serious injury.

They are also inefficient, as:

- you are using your body weight instead of concentrated and controlled muscle-power to do most of the work
- you are applying the force through your upper body and back, so that the powerful leg muscles are not use to their full extent.

SAFER TECHNIQUES

As with other handling operations, dynamic handling applied to pushing and pulling of static loads achieves stability and power while minimising the risk to yourself.

Slide – Pushing and Pulling



Use this slide to talk through the points stated below.

The key points of the safer techniques are to:

- use your powerful leg muscles to maximise power
- apply the force directly from your legs to the load
- keep your back in its neutral position to place it under minimal risk.

You should note that:

- wearing shoes with a high- grip sole helps you to maintain a safe and solid stance
- using gloves can improve your grip, especially when using a rope for pulling.

DYNAMIC HANDLING APPLIED TO PUSHING

Once you have assessed the load and found that it is not too heavy for pushing (see Introduction above), you should position yourself by:

- facing the load
- adopting a wide asymmetric stance close to it
- bending your legs, with your knees pointing outwards, until your hips are about level with the top of the load and keeping your back straight.

When the top of the load and keeping your back straight.

When the top of the load is already higher than your hips, just bend your legs slightly.

Highlight: In situations where you find that you have to squat down to floor level, make sure that the leading foot of your asymmetric stance is far enough forward, so that you are still stable after pushing the load.

You should then:

- place your hands safely on the load, wrapping your fingers around its corners or sides wherever possible
- tuck your elbows into your sides, supporting your lower arms against the front of your hips, as close to your wrists as possible.

You are now ready to push the load. To do so:

- relax your legs
- drive your whole body forward with your legs, keeping your back straight, your arms tucked into your sides and your wrists close to your hips.

Highlight: The power in this technique comes solely from your legs. The hand and arm position ensure that you are applying the force directly to the load and not through your upper body. This technique gives you maximum power and control at a minimum risk to yourself.

To continue pushing, you simply:

- follow the movement through
- take two small steps forward, thus placing yourself into a new starting position
- repeat the technique.

Gem: Most people have experienced being overpowered by a full supermarket trolley when going around corners. We nearly always try and use our upper bodies to keep the trolley on the correct path, however this clearly is ineffective. Using the dynamic handling techniques, you can amaze friends and family with your power and agility!

Note: It is often difficult to correctly perform this technique with loads which come to slightly above knee level. In such circumstances you should either squat down further to a comfortable position or consider using other means of moving the load. Thorough risk assessment in the workplace will ensure that your delegates only need to handle appropriate loads.

Demonstrate: Demonstrate the pushing technique, using a box on a table or perhaps a trolley. You should mention the key points of the procedure while you are performing them.

You can then turn this demonstration into a group practical by asking your delegates to repeat what you have done. Talk through the points of the technique at each stage and with each delegate. Encourage them to push properly and ask them whether they feel the power this technique gives them.

DYNAMIC HANDLING APPLIED TO PULLING

There are essentially two different varieties of pulling:

- you might face the load and pull backwards using a rope or a long handle
- you can use a rope and face away from the load, pulling forwards.

They both have different benefits and are equally useful. Facing the load enables you to monitor its movement more effectively. When facing away from the load, you have better control over where you are going.

Highlight: As pulling away from the load is a forward movement, it is extremely similar to and just as powerful as the pushing technique detailed above.

FACING THE LOAD

You can pull a load while facing it. Often objects have long handles, or you can use a rope.

YOU SHOULD:

- take up a wide asymmetric stance, facing the load
- firmly grip the rope or handle with your hand on side opposite your leading foot
- place this hand on your hip and tuck the elbow into your side
- lock your other hand on top of the one gripping the rope or handle.

You are now ready to start pulling, so:

- relax your legs and bend your knees slightly
- drive your whole body backwards with your legs, keeping your back straight and your hands in the same position.

FACING AWAY FROM THE LOAD

When you are facing away from the load and using a rope, you can use a technique very similar to the safer pushing method.

You should:

- take up a wide asymmetric stance, facing away from the load
- firmly grip the rope with your hand on the side opposite your leading foot
- place that hand on your hip and tuck the elbow into your side
- lock your other hand on top of the one gripping the rope.



You are now ready to start pulling, so:

- relax your legs and bend your knees slightly
- drive your whole body forward with your legs, keeping your back straight and your hands in the same position.

Highlight: In both pulling techniques, all the power is coming from your legs and not from your upper body or your arms. Make sure you keep your back straight and don't twist. Keep the arms resting on your hips. This close contact transfers the power from your legs to the load straight through the rope or handle.

To maintain the pulling movement, you simply:

- follow the movement through
- take two small steps in the direction you are going, thus placing yourself into a new starting position
- repeat the technique.



Practical: This exercise demonstrates the pulling techniques using a rope. It will provide your delegates with an opportunity to practice what they have learnt and gives them an appreciation of the power they can gain by using dynamic handling.

The delegates should take it in turns to participate.

- 1. Face each other
- a) Both adopt the correct pulling position.
- b) let yourself be pulled by your partner, while resisting the force to a certain degree.
- c) Reverse roles, with you pulling and the delegate resisting.
- 2. You face away
- a) Adopt the correct pulling position.
- *b)* Ensure that your delegate is positioned in the correct pulling position and then pull against the other's resistance.
- 3. The delegate faces away
- a) Reverse roles, with the delegate facing away from you and performing the pulling movement.

Note: Talk through the points of the technique at each stage and with each delegate. Encourage them to pull and push properly and ask them whether they feel the power this technique gives them. Do not resist too much, as this can lead to frustration or exertion on the delegate's part.

Be Aware: You should start pulling gently and only increase the force if you feel it is safe to do so. Ensure that the trainees are always using safer dynamic handling techniques and are not taking on a tug of war stance. As always, do not urge anyone to participate against their will.

Awkward Loads

Recommended timing: 35 minutes

Key subject areas

- The dynamic handling approach to awkward loads
- The dangers of common less-safe handling techniques
- Correct use of handles
- Correct lifting of wide, flat loads.

Key outcomes

At the end of this section, your delegates will be able to:

- judge whether it is appropriate to adapt dynamic handling to lift a load
- safely adjust dynamic handling to suit awkward loads where appropriate.

INTRODUCTION

As previously discussed, dynamic handling emphasises 'adaptability' and through an understanding of the semisquat technique the individual can select which is most appropriate to an awkward handling situation.

Applying dynamic handling is not difficult when you are dealing with small, light and regular shaped load. However often the loads you will need to handle to not conform to this simple picture. For example, you may encounter loads:

- with handles, that may require only one hand to lift
- which are difficult to grip, such as large, flat sheets.

Note: Talk through the points of the technique at each stage and with each delegate. Encourage them to pull and push properly and ask them whether they feel the power this technique gives them. Do not resist too much, as this can lead to frustration or exertion on the delegate's part.

When dealing with awkward loads, you must always:

- assess the weight of the load first (see Introducing dynamic handling)
- squat down using dynamic lifting technique to test whether a safe grip is possible
- consider using more than one person to lift the load, as it may not be safe for you to handle it on your own
- think about using available mechanical equipment instead.

Be Aware: Risk assessment should ensure that your delegates are not required to lift unsuitable loads. Remind your delegates of their duty to report hazardous working practice.

ADAPTING DYNAMIC HANDLING

In situations where you do decide that it is safe to lift an awkward load, you should apply the dynamic handling approach adapting the technique carefully to the task in hand.

To show the extent to which you can adapt dynamic handling safely, this section goes through two common examples, namely:

- lifting loads with handles
- wide and flat loads.

These examples should give you a good idea of what can and can't be done in order to adapt dynamic handling.

Be Aware: Do not change the basic characteristics of dynamic handling when making adjustments for awkward loads. See the examples further on to get an idea of what sort of adjustments are feasible. If the load being lifted compromises dynamic handling too far, then lifting it may be unsafe and you should use alternative methods instead, such as mechanical equipment.

THE COMMON INEFFICIENT TECHNIQUES

Most people use variations of the classic less-safe top-heavy movement when lifting awkward loads.

Loads with handles are often approached by:

- stooping to grip the handles
- lifting the load with your upper body, using mainly the muscles in your back.

Flat, wide loads are usually handled in a similar way, by:

- stooping down to stand the load on its side
- jerking the load upwards to obtain a good grip along its lower edge
- returning to an upright position using the muscles in your back
- sometimes placing the load on your shoulder.

The disadvantages and risks of these common techniques are clear. They:

- place your back at risk through the use of top-heavy movements
- may not provide a secure grip
- can place an uneven load on your spine
- are inefficient as you do not use your powerful leg muscles.

In both cases, with a suitable load, the dynamic handling approach can be carefully adapted to provide a safe and efficient solution.

CORRECT USE OF HANDLES

Using the semi-squat technique, the handles on a box or a case are usually too high to warrant squatting down all the way and often only take one hand to lift.

Most loads which have handles lend themselves well to adapted dynamic handling techniques. Provided the object is not too large or unwieldy, you can:

- stand in an asymmetric stance close to the load, with the load between your feet if possible
- bend your legs, follow the principles of the semi-squat, until you are at the right height for gripping the handle(s)
- take a firm grip on the handle(s)
- straighten your knees and use leg power to stand up, bringing the load up with you in the process
- avoid any twisting movements.

Remember to stand with the load between your feet if possible.

Demonstrate: Demonstrate this adapted technique on a box with two handles. Highlight the fact that you are adhering to the dynamic handling principles.

Often loads have a single handle on top and they can be lifted with one hand, like a suitcase or shopping bag for example. Doing so can harm your back as the weight of the load pulls your arm down and you compensate by leaning to one side and using the free arm to counterbalance. This creates an uneven loading of the spine and should be avoided.

It is a good idea to:

- avoid lifting heavy objects with one hand and to use proper twohanded techniques or mechanical equipment instead
- lift another bag, suitcase, etc. of similar weight with the other hand to rebalance.

If you do decide to lift an object in each hand, you should:

- stand between the two loads, with their handles aligned
- use dynamic handling to:
 - o bend your knees to a suitable height
 - o grip the handles
 - bring yourself into an upright position

Demonstrate: Demonstrate this technique with one and then two light bags, suitcases, etc. Two briefcases or full carrier bags will do and are easier to provide than a suitcase.

Highlight: Suitcases/carrier bags are typically encountered outside the workplace. Remind your delegates that dynamic lifting technique should be used in all circumstances, not just at work.



CORRECT LIFTING OF WIDE, FLAT LOADS

Some loads are stored with their widest side facing up, such as gardening grow-bags, bags of cement or flat boxes. This makes it difficult to lift them with the standard dynamic handling approach, especially as using the asymmetric grip is often impossible.

To help you, you should:

- bend your legs, follow the principles of the semi-squat, until you are at the right height for gripping the handle(s)
- place one hand around the bottom edge of the load to use as stabilisation
- use the other hand on the far edge to bring the load up to a standing position.

In this way, you have brought the load into a more convenient and familiar position. You can then:

- use the standard asymmetric grip or alternatively the hug-grip, where you hug the load against your upper body
- stand up using either dynamic handling technique

Demonstrate: Show your delegates this technique. You can use a load with the same shape as, say, a bag of cement or potting compost, but make sure that it weighs significantly less and is solid instead of shifting easily. You can make this kind of load yourself using some newspapers and wrapping paper.

It is important that you assess the load beforehand to ensure that:

- it will still fit between your knees when standing on one edge
- the far edge of the load is roughly within arm's length when you are squatting down, so that you will be able to reach it without over-stretching
- you will still be able to see past the load after standing up.

In circumstances where a load does not fulfil these criteria, the technique described above may be unsafe and you should reconsider the situation.

Be Aware: Some loads are simply too large for one person. You need to be able to move safely while holding the load, with sufficient visibility and freedom. If the load is too large or unwieldy and its weight does not exceed the recommended guidelines (see Manual handling and the law), then it may be suitable for dual or team lifting.

Discuss: It is always a good idea to use an example from your workplace. Devise a way of adjusting dynamic handling safely for handling a load that your delegates deal with on a day-to-day basis. You can then have a brainstorming session, asking them to come up with suitable solutions. Make sure you coax them in the right direction and clearly state at the end what a safe approach might be, so that your group is not left with any vague ideas or partial understanding.

YOUR NEXT STEPS IN MANUAL HANDLING TRAINING

After successfully completing a manual handling trainer course, and studying this resource package you are now able to:

- arrange an appropriate venue and required equipment for your manual handling course
- devise a tailored schedule for your delegate group
- communicate the importance of handling training
- motivate delegates to take responsibility for their own safety
- discuss the causes of back pain and injury associated with manual handling
- explain simply the mechanics of the back
- present convincing arguments in favour of using dynamic handling
- describe the benefits and application of safer movement patterns
- demonstrate and teach specific static and client handling techniques.

EVALUATING YOUR DELEGATES' UNDERSTANDING

You may wish to test your delegates' level of understanding of the material covered in your training course and your organisation may require this formal assessment approach.

When designing your method of evaluation, make sure that:

- all questions you ask your delegates can be answered from your course's subject matter
- your delegates get enough opportunity to revise
- the practical techniques that you evaluate have been practised several times until the delegates are competent.

For a short training course in manual and client handling OFI suggests the following methods of evaluation:

- practical assessment of handling skills
- verbal assessment of theory topics you have covered
- a short multiple-choice written assessment.

Be Aware: You must be aware that any evaluation will only give you a snapshot view of your delegates' appreciation of course content at the time of the test.

You should also consider that some people might find formal examinations or tests stressful and unnerving, in which case a formal evaluation will not be the best testing method.

EVALUATING YOUR COURSE

Each delegate who attends one of your training sessions should fill out an evaluation form. It is important that you read them all thoroughly, taking note of positive and negative comments and looking for areas to improve in the future. You should ensure that the comment sheets are anonymous so that your delegates feel free to give open and honest responses.

The comments you receive are direct feedback of how well you are doing your job and should be taken seriously. Always try to correct or improve any negative aspects in the next course that you run.

TRAINING FOLLOW-UP

After training, your delegates will return to their workplace. Although you have taught them about the causes of back pain, the risks involved in their daily routines and the correct way to reduce these, it is by no means certain that your trainees will automatically adopt the new techniques or avoid slipping back into old habits. You will have experienced at first hand the importance of having the message reinforced after completing your training as a 'key trainer'.

You can use a variety of measures to strengthen your delegates' understanding and to make it easier for them to continue using base movement, including:

- handing out *Osteopaths For Industry*'s A5 delegate Toolkit booklets summarising all the main points from your training session
- reinforcing safer techniques by giving out *Osteopaths For Industry*'s credit card sized Jogger cards which act as a reminder of the key points of dynamic handing techniques
- organising an awareness campaign in communal areas with posters (such as the staff restaurant, etc.), reminding them to use the safer techniques in their daily work
- using a follow-up actions to address any shortfalls
- carrying out a re-assessment of the workplace, informally inspecting the techniques your delegates are using.

These steps also help you to report back to higher management about the success of your organisation's training programme by giving you concrete measures of performance and examples of the skills being applied.

Your organisation should also have a policy to provide refresher courses, both for yourself as manual handling trainer through professional consultants such as *Osteopaths For Industry*, and for your delegates.

You can find out more about *Osteopaths For Industry*'s training resources or refresher courses information in the Appendix section.

COMMENTS AND QUERIES

It is important for us at *Osteopaths For Industry* to receive feedback from key trainers like yourself, who are using this pack in the front line of manual handling training. We welcome your comments and suggestions. Similarly, you might have questions regarding an aspect of the training pack. In either case, you can contact OFI by telephone, e-mail or in writing at:

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APPENDIX 1: TECHNICAL TERMS GLOSSARY

Α

acute low back pain - a rapid onset of pain in the low back

asymmetric grip - a non-symmetric grip used in dynamic handling to provide a secure and firm hold

asymmetric stance - a non-symmetric foot position used in dynamic handling to provide power and stability

В

bum lift - a *static handling* expression for a less-safe lifting technique where the backside is lifted first and the rest of the body follows

С

cascade training (one-level) - the concept of training key trainers who proceed to train groups of staff to a more basic level of understanding in order to efficiently train large numbers of employees

cervical spine - a part of the spine, consisting of the first 7 vertebrae in your neck

chronic low back pain - continuous pain in the low back over a long duration, possibly of varying intensity

coccyx - a small bone situated at the end of the *sacrum*, which you can feel at the bottom of your back

contusion - the medical term for a bruise

cumulative strain - the build-up of micro trauma over time which may lead to serious injury

D

disc - see inter-vertebral disc

disc prolapse - see slipped disc

dynamic handling - the general approach to handling that should be used in all activities

F

force-meter - a spring, with a hook at one end, attached to a gauge, which can be attached to a load and then pulled, giving a read-out of the force applied (also known as a *spring gauge*)

frog lift - a *static handling* expression for a less-safe lifting technique where you squat down with both feet underneath the body and both heels rise off the floor

fulcrum - the fixed point supporting the lever between you and the load

G

gluteus-maximus - the muscles in your buttocks

I

inter-vertebral disc

a small, round disc of strong tissue surrounding a gel-like centre, one of which sits between each pair of successive *vertebrae* in the spine

L

laceration - the medical term for a cut

lever - a long bar, plank or other object with one end placed underneath a load and supported at a point along its length, which is used to help move or lift the load

lever arms - the two parts of a lever extending either side of the lever's fulcrum

leverage effect - a mechanical phenomenon, allowing *levers* to reduce or increase the effort you need to lift or move a static load

ligament - a strong fibre in the body acting as support for joints and bones

lumbar spine - the lowest part of the spine, situated in the small of the back and consisting of 5 vertebrae

lumbar-sacral joint (LS joint) - a joint of the spine situated between the lumbar spine and the sacrum

М

micro trauma

small, often unnoticed damage to the body which may lead to serious injury through *cumulative strain*

musculo-skeletal disorders - any disease, damage or other problem of the musculature or bone-structure

Ρ

prolapsed disc - see slipped disc

Q

quadriceps - the four-headed muscles along the front of your thighs

S

sacrum - the backward-curving structure of fused vertebrae situated at the end of the spine

semi-squat - the technique that emphasises decreased bending of the knees with a straight but no longer upright back

slipped disc - a misleading term describing the breaking up of the outer layers of an *inter-vertebral disc*, leading to severe pain when the disc touches the spinal nerves (technically known as a *prolapsed disc* or disc prolapse)

Sprain - the medical term for a *ligament* injury

spring gauge - see force metre

static handling - a general term encompassing all kinds of transporting or moving a non-live load by hand or by bodily force

stooping - a technical term for bending forward

strain -the medical term for a muscle injury

т

tendon -a string-like fibre in the body connecting a muscle to a bone or joint and relaying the muscle's actions

thoracic spine - the middle and largest part of the spine, situated behind the rib cage and consisting of 12 vertebrae

top heavy movement -the common potentially harmful movement pattern involving *stooping*, twisting and using the back's muscles

v

vertebra (vertebrae) - the bones which are stacked on top of each other separated by *inter-vertebral discs* to form the spine.

APPENDIX 2 - SAMPLE COURSE OUTLINES

OFI appreciates that every organisation faces different logistical difficulties when implementing training sessions within their organisation. The training schedules included in this appendix are a suggestion for an effective half-day and one-day manual handling training program.

You may have to reduce the length of your training course further, due to time constraints. The bullet-point layout and design of the manual will assist you in doing so. However, OFI strongly advises that you allow the maximum time possible to train in manual handling as this is a subject that requires a high degree of theory and practical appreciation.

| Half-day Manua | alf-day Manual Handling Training Course 1-day Manual Handling Training Course | | andling Training Course |
|----------------|---|---------------|---|
| | | | |
| 09.15 - 09.30 | Facts and figures | 09.15 - 09.45 | Facts and figures |
| 09.30 - 09:45 | Manual handling and the law | 09.45 – 10:30 | Manual handling and the law |
| 09.45 – 10:15 | Understanding anatomy | 10.30 – 10:45 | Tea/Coffee break |
| 10.15 – 10:35 | The Leverage effect | 10.45 – 11:25 | Understanding anatomy |
| 10.35 – 10:45 | Causes of back pain | 11.25 – 11:45 | The Leverage effect |
| 10.45 – 11:10 | Introducing dynamic handling | 11.45 – 12:05 | Causes of back pain |
| 11.10 - 11:30 | Tea/Coffee break | 12.05 – 13:00 | Introducing dynamic handling |
| 11.30 - 11:45 | Dual & Team Lifting theory and practical | 13.00 - 14:00 | LUNCH |
| 11.45 – 12:05 | Pushing & Pulling theory and practical | 14.00 - 14:30 | Dual & Team Lifting theory and practical |
| 12.05 – 12:20 | Awkward loads theory and practical | 14.30 - 15:10 | Pushing & Pulling theory and practical |
| 12.20 – 12:30 | Course appreciation | 15.10 – 15:25 | Tea/Coffee break |
| 12.30 - 12:40 | Summary | 15.25 – 16:00 | Awkward loads theory and practical |
| | | 16.00 - 16:20 | Course appreciation |
| | | 16.20 - 16:30 | Summary |

APPENDIX 3 - OFI'S SERVICES

REFRESHER COURSES

The certificate you receive from OFI after successfully completing a key instructor course is valid for three years. In this time, handling techniques will have changed sufficiently to warrant retraining. Your knowledge of course material will also have diminished gradually over the period, so you may feel that a refresher course would be very helpful.

Osteopaths for Industry offers a two-day refresher module for handling instructors. This too is a certified course and aims to:

- update delegates on manual handling regulations
- refresh delegates' assessment skills
- bring delegates' knowledge of handling theory and practical techniques up to date.

PRODUCT AND TRAINING RESOURCES LISTING

For a full list of product and training resources please visit <u>www.ofi.co.uk</u>

Should you be interested in any of Osteopaths For Industry's training courses, please do not hesitate to contact us:

Osteopaths For Industry (Health Response UK) 1 Grove Way, Esher, Surrey, KT10 8HH (UK) Tel: 020 8398 9522 | Fax: 020 8711 3058 E-mail: admin@ofi.co.uk | Web: www.ofi.co.uk

APPENDIX 4 – DOCUMENT REVISION HISTORY

| 16/04/2018 | Revision 1.00 | - Initial implementation for Bibby. |
|------------|---------------|---|
| 10/12/2019 | Revision 1.10 | - Revised terminology in relation to 'good/correct' and 'bad/incorrect' |
| | | handling technique I.e. 'safer' and 'less-safe'. |
| | | - Revised 'cumulative strain' diagram. |
| | | - Various grammatical changes and corrections. |
| | | - Update of work-related injury statics and related PowerPoint slides. |
| 23/11/2020 | Revision 1.11 | - Update of work-related injury statics and related PowerPoint slides. |
| 20/04/2021 | Revision 1.12 | - Change branding from Bibby to Menzies. |
| 02/10/2024 | Revision 1.13 | - Update of work-related injury statics and related PowerPoint slides. |