Preventing injuries from manual tasks in the workplace

A risk management approach
Purpose of this workshop

At the end of this workshop you should be able to:

- Identify, assess and control manual task risks in a systematic manner
- Understand the role of the employer and workers in this process
Specific Learning Outcomes

• To understand what is meant by the term “manual tasks” and how they cause injury
• To understand the relevant legal requirements
• To apply the principles in the Code of Practice: Manual tasks (2010) to identify, assess and control risks.
Why this approach?

What is wrong with teaching people to lift safely?
Overview

Introduction
Legal Setting
Anatomy/Biomechanics
Manual Task Code & the Regulations
Hazard Identification
Risk Assessment
Risk Control
Who’s Responsible?
Conclusion
Manual tasks

Definition

Any activity or sequence of activities that requires a person to use their physical body (musculoskeletal system) to perform work
Hazardous Manual Tasks

Many things that workers do involve performing activities that can be considered to be manual tasks.

The term hazardous manual tasks is used to describe those that have the potential to cause injury.
Examples of manual tasks

- Carrying
- Lifting
- Pushing
- Holding
- Awkward postures
- Sustained postures
- Repetitive movement
Relevant Legal Requirements

• General Duty of Care
• Reporting & investigation requirements
• Risk management regulations
• Requirements to consult and co-operate
• Codes of Practice
Injuries from Manual Tasks

The types of injuries that can result from performing manual tasks include:

• Sprains/strains – muscles, ligaments & tendons
• Injuries or chronic pain affecting joints
• Disc injuries of the back or neck
• Injury to or compression of nerves
• Disorders affecting muscles or blood circulation
• Soft tissue injuries
How injuries occur

Injuries can occur from:

- Gradual wear and tear
- Sudden damage
- Direct trauma from unexpected events
Cost of Manual Task Injuries

1 in every 3 lost time injuries is a result of performing manual tasks.

1 in every 4 workers who suffers a manual task related lost time injury is off work for at least 3 months.
Anatomy & biomechanics

- Anatomy of the spine
- Body positions & postures
- Types of muscle work
- Principles of biomechanics
- The relationship between the human body and risk of injury
Anatomy of the spine
Trunk (spine) positions
flexion & extension

Neutral posture (standing straight) = decreased risk of injury
Awkward postures (bending forwards/backwards) = increased risk of injury
Trunk (spine) positions
side flexion & rotation

Neutral posture (shoulders aligned over hips and toes) = decreased risk of injury
Awkward postures (bending sideways or twisting) = increased risk of injury
Wrist positions
extension, neutral & flexion

Neutral posture  (hand in line with forearm) = decreased risk of injury
Awkward postures (hand bent forwards or backwards) = increased risk of injury
Hand & forearm positions
pronation & supination

Neutral posture (hand at mid-range: “handshake” position) = decreased risk of injury
Awkward postures (hand palm up or palm down) = increased risk of injury
Types of muscle work

• Dynamic
  Muscle contraction & movement.

• Static
  Muscle contraction & no movement.

Static muscle work (prolonged standing, sitting, holding hand/arm in one position) = increased risk of injury
REPETITIVE dynamic muscle work over time = increased risk of injury
Principles of biomechanics

Load close to body = decreased risk of injury

Load further from body = increased risk of injury
Using the spine as a crane

Load further from body = increased risk of injury
Principles of Biomechanics: Back

• Obtain a wide base of support for stability
• Become familiar with the load and try to get a good grip of the load.
• Maintain neutral curves of spine
• Maintain load close to body
• Use the stronger larger muscles of the legs to create force where possible
• Execute smooth, controlled movement
• Stabilise the back by using abdominal muscles and deep back muscles where possible.
Principles of Biomechanics: Shoulders & Wrist

- Avoid work where the upper arm is away from the side of the body
- Avoid twisting
- Avoid holding one position for long periods of time
- Avoid repetitive movement
- Avoid long distance carrying
- Try to maintain the wrist and forearm in neutral postures
Relationship between the human body and the risk of injury

The risk of injury increases when:

• The body is using awkward postures, rather than preferred neutral postures
• Muscles are involved in static work (contraction without movement) or in highly repetitive movements
• The body is exposed to high/intense (one-off), cumulative (ongoing) or unexpected forces
Where does this risk come from?

The sources of risk that create these body conditions where injury may occur include:

- Work area design and layout
- Nature of the item, equipment or tool
- The nature of the load
- The working environment
- Systems of work, work organisation and work practices
Code of Practice: Manual Tasks

- Step 1. Hazard ID (spotting the problem)
- Step 2. Risk Assessment (understanding the problem)
- Step 3. Risk control (dealing with the problem)
Code of Practice: Manual Tasks

Step 1. Hazard Identification
(spotting the problem)

Regulations 3.1(a) and 3.4(2)(a) requires the employer, the main contractor or a self-employed person to identify each hazard that is likely to arise from manual tasks at the workplace, as far as is practicable.
Step 2. Risk Assessment
(understanding the problem)

Regulations 3.1(b) and 3.4(2)(b) requires the employer, the main contractor or a self-employed person to assess the risk of injury or harm (if any) to a person resulting from each hazard identified within manual tasks, as far as is practicable.
Code of Practice: Manual Tasks

Step 3. Risk control
(dealing with the problem)

Regulations 3.1(c) and 3.4(2)(c) requires the employer, the main contractor or a self-employed person to consider the means by which the risk (from hazards in manual tasks) may be reduced, as far as is practicable.

Additionally, Section 19 (1) of the Act requires employers, as far as is practicable, to provide and maintain a working environment in which employees are not exposed to hazards.
Hazard identification

What is it?

• The process of identifying factors within a manual task which could result in injury.

Why do we do it?

• To collect information and look for trends on risk factors within manual tasks.
Hazard identification process

Stage 1
Look for where injuries / hazards are occurring

The three step process

Step 1 - Hazard identification
Check injury/hazard reports and other documents

Step 2 - Risk assessment
Consult with workers, supervisors and safety and health representatives (where they exist)

Step 3 - Risk control
Look at manual tasks
Collect information and look for trends
Go to step 2: Risk assessment
Hazard identification process

Stage 2
Talk to workers & OSH Reps about the tasks that cause problems

The three step process

Step 1 - Hazard identification
Check injury/hazard reports and other documents

Step 2 - Risk assessment
Consult with workers, supervisors and safety and health representatives (where they exist)

Step 3 - Risk control
Look at manual tasks
Collect information and look for trends
Go to step 2: Risk assessment
Hazard identification process

Stage 3
Look at tasks being performed

The three step process

Step 1 - Hazard identification
Check injury/hazard reports and other documents
Consult with workers, supervisors and safety and health representatives (where they exist)
Look at manual tasks
Collect information and look for trends
Go to step 2: Risk assessment

Step 2 - Risk assessment

Step 3 - Risk control
Hazard identification process

Stage 4
Collect information and look for trends

The three step process

Step 1 - Hazard identification
Check injury/hazard reports and other documents

Step 2 - Risk assessment
Consult with workers, supervisors and safety and health representatives (where they exist)

Step 3 - Risk control
Look at manual tasks

Collect information and look for trends

Go to step 2: Risk assessment
### Step 1 Manual tasks: Hazard identification form (example)

<table>
<thead>
<tr>
<th>Manual task no./name</th>
<th>How identified</th>
<th>Risk factors(s) of concern</th>
<th>Location/group/occupation at risk</th>
<th>Number of workers at risk</th>
<th>General comments</th>
<th>Order of priority</th>
<th>Date of risk assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. Name:</td>
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<tr>
<td>No. Name:</td>
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</tbody>
</table>
DISCUSSION POINT

• With the person next to you, list 5 manual tasks in your area that could cause an injury & why

Manual tasks are more than lifting; they can include static postures, repetitive movements, vibration, etc.
Risk assessment

What is it?
• The process of determining which identified factors within a manual task have potential to cause injury, and why.

Why do we do it?
• To determine appropriate ways of dealing with hazards.
Stage 1
Prioritise tasks for assessment

Risk assessment process

The three step process

Step 1 - Hazard identification

Step 2 - Risk assessment

Prioritise manual tasks

Select manual task

Understand the problem

Go to step 3: Risk control

Step 3 - Risk control
## Risk Assessment Matrix

<table>
<thead>
<tr>
<th>CONSEQUENCE</th>
<th>Very Likely</th>
<th>Likely</th>
<th>Unlikely</th>
<th>Highly Unlikely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatality</td>
<td>HIGH</td>
<td>HIGH</td>
<td>HIGH</td>
<td>MEDIUM</td>
</tr>
<tr>
<td>Major injuries</td>
<td>HIGH</td>
<td>HIGH</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
</tr>
<tr>
<td>Minor injuries</td>
<td>HIGH</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>LOW</td>
</tr>
<tr>
<td>Negligible injuries</td>
<td>MEDIUM</td>
<td>MEDIUM</td>
<td>LOW</td>
<td>LOW</td>
</tr>
</tbody>
</table>
Risk assessment process

Stage 2.

Select a manual task

Break the task down into activities involved
Risk assessment process

Stage 3.
Understand the problem
Look at the principle risk areas
Risk Factors: Actions and Postures

- Holding loads or arms away from trunk
- Reaching upwards or handling loads above shoulder height
- Bending back or neck forwards and handling loads below mid-thigh height
- Twisting the back or neck
- Sideways bending or load handling on one side
- Long carrying distances
Risk Factors: Actions and Postures cont. ....

- Sudden, jerky, rapid or unexpected movements
- Bending hands or wrists forwards or to the side
- Reaching behind
- Crawling, kneeling, crouching, squatting, lying or semi-lying
- Twisting or wringing using fingers or hands
- Maintaining the same posture for long periods
- Repeating similar movements or actions
Risk Factors: Forces and loads

- Heavy, bulky, large or awkward
- Difficult or uncomfortable to grasp
- Unstable, unbalanced or unpredictable
- Harmful or fragile
- Handling animals or people
- Sudden, jerky, rapid or unexpected forces
- Strenuous lifting, lowering or carrying
- Strenuous pushing and pulling
- Sustained application of force or grip
Risk factors: Vibration

- Whole-body vibration
- Hand-arm vibration

Risk factors: Work environment

- Posture or movement constraints
- Rough or slippery floors
- Uneven ground or variation in levels
- Adverse climatic conditions
- Poor lighting
- Narrow or obstructed thoroughfares
- Poor ventilation
- Distracting or loud noises
Risk Factors: Systems of work, work organisation, & work practices

- Job demands and control
- Task design
- Work load
- Task duration, frequency and variety
- Pace of work and time constraints
- Peak demand
- Working hours
- Support in the workplace
Risk Factors: Worker characteristics

- Young or older persons
- Pregnant (or recently birthed) women
- Special needs and physical limitations
- Special skills, capabilities and knowledge
- Personal protective clothing & equipment
- Language or cultural barriers
Risk assessment process

Summarise the information on the risk assessment form
DISCUSSION POINT

• Go back to your list of manual tasks in your area that could cause injury

• With the person next to you, complete the risk assessment form provided to determine which risk factors need to be addressed
## Manual Tasks: Risk assessment form (example)

<table>
<thead>
<tr>
<th>Location/group</th>
<th>Manual task (No. )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of assessment:</td>
<td>Assessors/people involved:</td>
</tr>
</tbody>
</table>

### Risk factors to consider

Refer to the information in Appendix 4 of this code of practice for guidance.

<table>
<thead>
<tr>
<th>Level of risk</th>
<th>Sources of risk</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Note the possible source(s) of risk, i.e.:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• work area/layout;</td>
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<tr>
<td></td>
<td>• nature of the load;</td>
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<tr>
<td></td>
<td>• nature of item, equipment, tool;</td>
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<tr>
<td></td>
<td>• working environment; or</td>
<td></td>
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<tr>
<td></td>
<td>• systems of work, work organisation or work practice.</td>
<td></td>
</tr>
</tbody>
</table>

### Actions and postures

Do the actions and postures involve:

- Holding loads or arms away from trunk
- Reaching upwards or load handling above shoulder height
- Bending the back or neck forwards or handling below mid-thigh height
- Twisting the back, neck or upper body
- Sideways bending or load handling on one side
- Long carrying distances
- Sudden jerky, rapid or unexpected movements

Make notes on reasons for your assessment.
<table>
<thead>
<tr>
<th>Risk factors to consider</th>
<th>Level of risk</th>
<th>Sources of risk</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bending hands or wrists forwards, to the side or twisting</td>
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<tr>
<td>Reaching behind or over reaching in any other direction</td>
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</tr>
<tr>
<td>Crawling, kneeling, crouching, squatting, lying or semi-lying</td>
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<tr>
<td>Twisting or wringing using fingers or hands</td>
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<tr>
<td>Maintaining the same posture for prolonged periods</td>
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<tr>
<td>Repeating similar movements or actions</td>
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<tr>
<td><strong>Forces and loads</strong></td>
<td><strong>Are the forces and loads handled:</strong></td>
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<tr>
<td>Heavy</td>
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<tr>
<td>Bulky, large or awkward</td>
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<tr>
<td>Difficult or uncomfortable to grasp or hold</td>
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<tr>
<td>Unstable, unbalanced or unpredictable</td>
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<tr>
<td>Harmful or fragile</td>
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<tr>
<td>A person or animal</td>
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<tr>
<td>Sudden, jerky, rapid or unexpected</td>
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<tr>
<td>Involving strenuous lifting, lowering or carrying</td>
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<tr>
<td>Risk factors to consider</td>
<td>Level of risk</td>
<td>Sources of risk</td>
<td>Comments</td>
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<td>---------------------------------------------------------------</td>
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<tr>
<td>Requiring strenuous pushing or pulling</td>
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<tr>
<td>Involving sustained application of force or grip</td>
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<tr>
<td><strong>Vibration</strong></td>
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<tr>
<td>Does the work involve:</td>
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<tr>
<td>Driving for long periods</td>
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<tr>
<td>Driving on rough roads</td>
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<tr>
<td>Frequent use of hand powered tools or use for long periods</td>
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<tr>
<td>Using high grip forces or awkward postures when using power tools</td>
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<tr>
<td>Use of machines or tools where the manufacturer’s handbook warns of vibration</td>
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<tr>
<td>Workers being jolted or continuously shaken</td>
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<tr>
<td>Use of a vehicle or tool not suitable for the environment or task</td>
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<tr>
<td><strong>Working environment</strong></td>
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<tr>
<td>Is there in the working environment:</td>
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<tr>
<td>Constraints on postures or movement</td>
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<tr>
<td>Rough or slippery floors</td>
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<td>Variations in levels or uneven ground</td>
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<tr>
<td>Adverse climatic conditions eg cold, hot, wind, ice or humidity</td>
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<tr>
<td>Risk factors to consider</td>
<td>Level of risk</td>
<td>Sources of risk</td>
<td>Comments</td>
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<td>Poor lighting</td>
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<td>Narrow or obstructed thoroughfares</td>
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<td>Poor ventilation</td>
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<tr>
<td>Distracting or loud noises</td>
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</table>

**Systems of work, work organisation and work practices**

In the working environment do workers:

- Find activities to be too long, too fast or too frequent to maintain
- Have difficulty in maintaining levels of physical work
- Frequently need to meet tight deadlines
- Experience inadequate activity variation or inadequate task breaks
- Experience sudden changes in workload eg seasonal changes
- Experience lack of control over work rate or demands
- Have bonus or incentives schemes, which may cause unsafe work rates
- Have performance monitored closely and continuously
- Undertake a flow of work that does not minimise handling, repetitive movement or sustained postures
- Require high levels of concentration and attention
Now that you have assessed the risk for each manual task or activity, and you understand the nature and source of the problem associated with the particular task, proceed to Step 3: *Risk control*
Risk Control

What is it?
The process of eliminating or reducing risk associated with identified and assessed risk factors

Why do we do it?
To make the job or task safer for workers and prevent/reduce injuries from manual tasks
Risk control

The three step process

- Step 1 - Hazard identification
- Step 2 - Risk assessment
- Step 3 - Risk control

Develop control options
- Implement the control measures and review
Risk control process

• Eliminate the hazardous manual task;
  or
• Redesign the load, work area, work practices or equipment to minimise the risk of injury;
  and
• Provide appropriate manual task training.
Risk control strategies

Risk factors can be reduced by addressing the source of the risk in a number of ways, such as redesigning, modifying, altering and substituting:

- work area and layout;
- nature of items, equipment and tools;
- nature of the load;
- working environment; or
- systems of work, work organisation and work practices.
Work area & layout

Storing heavier & frequently used items at waist level can reduce poor actions and postures.
Work area & layout

Raising the height allows people to work in more upright postures.

Before

After
Nature of items, equipment and tools

Use levers to reduce the amount of force required
Nature of items, equipment and tools

Provide adjustable chairs for computer based tasks
Nature of the load

Repackage to reduce weight
Nature of the load

Improving grip by providing hand holds
Working environment

This foundry worker is at increased risk of injury due to the hot environment and protective clothing required. The hot item also requires the worker to hold the item away from the body.
Systems of work, work organisation & work practices

Design safe jobs and work practices by considering the following:

– duration & frequency
– work rates and job demands
– mix of activity & breaks
– peak demand
– working hours
– special individual needs
Training

Risk management training
• During induction; and
• As part of an on-going risk control program.

Task specific training
• During induction;
• Refresher training; and
• When tasks/equipment are changed.
DISCUSSION POINT

• Go back to your completed risk assessment for the manual task in your area that you selected

• With the person next to you, discuss the appropriate control strategies to address the risk factors you discussed
Follow up

Aim
To ensure that:
• Changes have reduced the risk of injury; &
• No new hazards have been introduced.
## Appendix 3: Step 3 Manual tasks: Risk control and follow up form (example)

### Short term (up to four weeks)

<table>
<thead>
<tr>
<th>Action required</th>
<th>Person responsible</th>
<th>Completion date</th>
<th>Review date</th>
<th>Comments on review</th>
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### Medium term (four weeks to six months)

<table>
<thead>
<tr>
<th>Action required</th>
<th>Person responsible</th>
<th>Completion date</th>
<th>Review date</th>
<th>Comments on review</th>
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### Long term (more than six months)

<table>
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<th>Person responsible</th>
<th>Completion date</th>
<th>Review date</th>
<th>Comments on review</th>
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</table>
Group Activity: Who’s responsible?

• Who should be involved?
• What consultation is needed?
• Should records be kept?
Summary

The three step process

Step 1 - Hazard identification
Identify hazardous manual tasks

Step 2 - Risk assessment
Assess the risks arising from the identified hazardous manual tasks

Step 3 - Risk control
Decide on the use of appropriate control measures

Have the control measures introduced any new hazards?
Have the control measures eliminated or reduced the risks?

Follow up and review
Conclusion

The aim is to reduce the risk of injuries in the workplace due to manual tasks, using the 3 step process detailed in the WA Commission Code of Practice - Manual Tasks (2010).
Questions and Feedback

• Do you have any questions regarding the training?

• How do you think this session ran? Any suggestions for improvement

• Do you have any concerns about manual tasks that you or others have to complete in our workplace?