What is Manual Material Handling

Manual materials handling (MMH) means moving or handling things by lifting, lowering, pushing, pulling, carrying, holding, or restraining. MMH is also the most common cause of occupational fatigue, low back pain and lower back injuries.

Symptoms

- Numbness
- Pain
- Aches
- Burning sensation
- Swelling
- Tingling sensation
- Weakness
- Cramping
Musculoskeletal disorders are associated with some risk factors. These factors may be found during work activities. Along with personal factors such as physical limitations or existing health conditions, these risk factors contribute to the development of MSDs.

**Workplace Risk Factors**

- Forceful exertion
- Repetitive movements
- Awkward posture
- Static posture
- Vibrations
# Musculoskeletal Disorders 2013 - 2014

Table 1.22: Number of confirmed WRMSD cases by industry, 2013 and 2014

<table>
<thead>
<tr>
<th>Industry</th>
<th>2014</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Sectors</strong></td>
<td>315</td>
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<tr>
<td>Construction</td>
<td>39</td>
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<td>Marine</td>
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<td>Manufacturing</td>
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<tr>
<td><em>Metalworking</em></td>
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<tr>
<td><em>Manufacture of Food, Beverages &amp; Tobacco</em></td>
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<td>3</td>
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<tr>
<td><em>Manufacture of Computer, Electronic and Optical Products</em></td>
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<td>4</td>
</tr>
<tr>
<td>Wholesale &amp; Retail Trade</td>
<td>23</td>
<td>20</td>
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<tr>
<td><em>Wholesale Trade</em></td>
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<td>14</td>
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<tr>
<td><em>Retail Trade</em></td>
<td>10</td>
<td>6</td>
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<tr>
<td>Transportation &amp; Storage</td>
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<td>39</td>
</tr>
<tr>
<td><em>Air Transport</em></td>
<td>24</td>
<td>18</td>
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<tr>
<td><em>Logistics &amp; Transport</em></td>
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<td>14</td>
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<tr>
<td>Accommodation &amp; Food Service Activities</td>
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<td>15</td>
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<tr>
<td><em>Food &amp; Beverage Service Activities</em></td>
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<td>Accommodation</td>
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<tr>
<td>Information &amp; Communications</td>
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<td>Financial &amp; Insurance Activities</td>
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<td>Administrative &amp; Support Service Activities</td>
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<td>Community, Social &amp; Personal Services</td>
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<td><em>Health Activities</em></td>
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<tr>
<td>Other Personal Service Activities</td>
<td>8</td>
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</tr>
</tbody>
</table>

30% of all WRMSD cases
Legislation

Workplace Safety and Health Act (WSHA)
All stakeholders, including employers, employees, self-employed persons, occupiers, principals, manufacturers and suppliers are to take reasonably practicable measures to ensure the safety and health of every employee and others who may be affected by the work being carried out.

Workplace Safety and Health (Risk Management) Regulations
The employer, self-employed person and principal shall conduct a risk assessment to address the safety and health risks posed to any person who may be affected by activities in the workplace.

Hazards to be identified in risk assessment are anything that can cause bodily injury and includes any physical, chemical, biological, mechanical, electrical or ergonomic hazard.
Legislation

Workplace Safety and Health (Incident Reporting) Regulations

When an employee is diagnosed with a reportable occupational disease, the employer must submit the written diagnosis prepared by a registered medical practitioner diagnosing the occupational disease to the Commissioner for WSH not later than 10 days after receiving it.

*Work-related musculoskeletal disorder of the upper limb* is specified in the Second Schedule to the WSHA and is reportable.

Work Injury Compensation Act

The Work Injury Compensation Act (WICA) makes provisions for compensation to employees for injury or illness suffered in the course of their employment.
Approved Codes of Practice

SS 514: 2005 Code of Practice for Office Ergonomics
This ACOP provides information and guidance to users, employers, manufacturers, and those who have control over the introduction of health practices into the office, specification and procurement of office equipment, on the application of ergonomics principles in the workplace.

SS 569: 2011 Code of Practice for Manual Handling
This ACOP serves as a reference standard of acceptable practices for manual handling operations in Singapore. It provides users, employers, manufacturers and suppliers information on ergonomics principles for manual handling work that reduce the risk of MSD injuries and disorders.
Manual Material Handling Activities in Transport & Storage

Work involves:
- Lifting
- Pushing
- Pulling
- Carrying
- Over-reaching
- Awkward postures e.g. moving in tight spaces between storage spaces

Practices to reduce risks:
- Use mechanical lifting aids e.g. height adjustable trolleys, pallet turn tables, electric pallet trucks
- Two persons
- Train workers in proper handling techniques
Manual Material Handling Activities in Wholesale & Retail

Work involves:
- Lifting
- Pushing
- Pulling
- Carrying
- Awkward postures e.g. over-reaching, moving in tight spaces between storage spaces.

Practices to reduce risks:
- Use mechanical lifting aids e.g. height adjustable trolleys, pallet turn tables, electric pallet trucks
- Adjust work pace and train workers in proper handling techniques

- Receiving of products
- Packing & unpacking
- Labelling & arrangement
- Inventory checking
- Providing service to customers
Manual Material Handling Activities in Accommodation & Food Services

Lifting and moving of loads

Work involves:
- Lifting
- Pushing
- Pulling
- Carrying
- Awkward postures e.g. over-reaching, moving in tight spaces

Practices to reduce risks:
- Use mechanical lifting/handling aids e.g. powered supplies trolleys,
- Storage racks with rollers for luggage storage
- Adjust pace of work and train workers in proper handling techniques
WSH Guidelines: Improving Ergonomics in the Workplace

Workplace Safety and Health Guidelines
Improving Ergonomics in the Workplace

6.2 Awkward Postures

Avoid lifting, twisting, or reaching for load(s) or object(s) which are high, above eye level, or at an uncomfortable level. Is the object heavy or large? Can other people or equipment be used to lift the object?

4.2 Protective Footwear

Wear protective footwear at all times while handling loose material (e.g., wood shavings, metal scraps, debris). Ensure that the shoes are comfortable and have good grip on slippery or uneven surfaces.

3.3 Hand Tools

Always use the right tool for the job. Incorrect tools can cause accidents. For example, using a hammer to drive a screw is inefficient and can cause injury. Use the appropriate tool for the task.

• Choose a type of output that is consistent with your body's natural posture.
• Design output to fit the user's needs, considering factors such as the user's size, strength, and experience.
• Use appropriate lighting to reduce eye strain.
• Use adjustable workstations to accommodate different user preferences.
• Use ergonomic keyboards and mice to minimize strain on wrists and fingers.
• Use footrests to support feet, reducing pressure on the lower legs and feet.
• Use anti-fatigue mats to distribute body weight and reduce injury from prolonged standing.
• Use adjustable chairs that allow for proper alignment of the spine, neck, and shoulders.
• Use adequate equipment, such as gloves, protective eyewear, and hearing protection, to mitigate risks associated with specific tasks.
• Use proper lifting techniques, such as bending at the knees and keeping the back straight, to avoid injury during heavy lifting.

5.0 General Guidelines

• Design in ergonomic principles throughout the design process, considering all aspects of the user's interaction with the product.
• Use user-centered design methods to ensure the product meets the needs of the target audience.
• Use feedback from users to continuously improve the product's design.
Ergonomics Programme

An ergonomics programme provides a systematic approach for the organisation to manage ergonomic hazards and issues at the workplace.

Elements of Ergonomics Programme

1. Management Commitment and Policy
2. Employee Involvement
3. Training and Education
4. Hazard Identification
5. Workplace Monitoring, Reporting and Medical Management
6. Implementation of Control Measures
7. Evaluation and Review
1. Management Commitment and Policy

- Treat ergonomic efforts as furthering the company’s goals of creating a safer and healthier work environment
- Assign and communicate responsibilities
- Provide assigned persons with authority, resources, information and necessary training

Set a policy to take ergonomics into consideration for the design and selection process of tools, job methods, workstation layouts and materials.
Ergonomics Programme

2. Employee Involvement

Employees from different levels should be involved to improve the workplace conditions. Their involvement will enhance employee motivation and job satisfaction, and increase the likelihood of them accepting job changes.

- Appoint a dedicated ergonomics team to identify and manage ergonomic issues at work
- Put in place a reporting system for employees to feedback signs and symptoms of work-related MSDs
- Encourage employees to give suggestions on ways to improve manual material handling activities
3. Training & Education

All employees, especially those in affected jobs, for example, manual material handling jobs where a known MSD hazard exists, should be trained and equipped with basic ergonomics knowledge.

- **All Employees**
  - General ergonomics awareness

- **Employees in jobs with suspected problems**
  - Job-Specific training

- **Supervisors in jobs with suspected problems**
  - Job-specific training

- **Ergonomics Team members**
  - Training in identifying and controlling ergonomic risk factors
4. Hazard Identification

In hazard identification, work-related MSDs and their associated risk factors are identified and analysed. Job tasks are prioritised based on job hazard analysis. Control measures are then implemented to control the risks as far as is reasonably practicable.

1. Conduct a hazard identification exercise together with employees who are involved in the job.
2. Break down the job into its various work tasks. Observe employees performing the tasks.
3. Identify risk factors in each work task. Start with a qualitative identification.
4. Prioritise certain work tasks for more detailed analysis.
5. Workplace Monitoring and Reporting

Employees with aches and pains due to job tasks are tell-tale signs of ergonomics issues in the workplace. Aches and pains complaints, injuries, and other ergonomic problems in the workplace should be proactively tracked.

- Employees are encouraged to report MSD symptoms or problems.
- Periodic symptoms surveys are carried out
- Reports of MSDs or its symptoms should be assessed to determine whether medical management should be provided
- Investigate feedback and identify problems work tasks/areas for improvement
- Work with the healthcare provider to manage injured worker integration back into the workplace
Ergonomics Programme

5. Medical Management

Early detection of MSD, prompt treatment and timely recovery from injuries can prevent the employee from being permanently impaired or disabled.

- Provide access to healthcare providers
- Provide information on work tasks and work demands to healthcare providers
- Obtain a written opinion from healthcare provider on work-related medical conditions related to the MSD reported, recommended work restrictions and follow-up during the recovery period.
Ergonomics Programme

6. Implementation of Control Measures

Elimination/Substitution
- Automation e.g. shrinking wrapping machine

Engineering Controls
- Mechanical aids or tools
- User-adjustable work stations

Administrative Controls
- Scheduling sufficient rest breaks
- Job rotation to reduce repetitive movements
- Training workers to raise awareness of ergonomics risk factors
- Consider pre-existing conditions of staff when assigning manual material handling tasks
Ergonomics Programme

7. Evaluation and Review

Programme activities should be evaluated and reviewed periodically to ensure that all elements of the ergonomics programme remain relevant and effective.

**Evaluation**
- Risk factor checklist or job analysis method
- Symptom survey

**Review**
- Engineering control measures or other innovative technologies
- Risk assessments, inspections and worker training

**Long Term Indicators**
- Incidence rate of MSDs
- Productivity or quality
- Job absenteeism or turnover rate
- Performance of employees at work
Conclusion

Zero MSDs arising from work

All work-related musculoskeletal disorders (MSDs) can be prevented.

**Ergonomics Programme & Risk Assessment**
- Hazard identification
- Risk analysis
- Implement control measures

**Design with Ergonomics consideration**
Incorporates *ergonomics principles* into design and selection process of tools, job methods, workstation layouts and materials.

All work-related musculoskeletal disorders (MSDs) can be prevented.

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Go to WSH Council’s webpage: [www.wshc.sg](http://www.wshc.sg). Click on “Topics” followed by “Ergonomics”
Thank you.