

# BCMSA Conference 2013: MSD Reduction for Outside Workers

## Musculoskeletal Disorder Reduction: Outside Workers

Presented By  
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### Available Training

- BCMSA in conjunction with WorkSMART Ergonomics Ltd. currently offers a 4 hour worker and 8 hour supervisory workshop on how to reduce Musculoskeletal Disorders in municipalities



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### MSI vs MSD

- Musculoskeletal Disorder – represent injuries or conditions that develop over repeated exposure to workplace hazards (cumulative) or through overexertion (acute)
- Musculoskeletal Injury – includes all disorders plus traumatic injuries such as those attributed to slips/trips/falls, crushes, lacerations, struck-bys, etc.

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### How Bad Is It?

- According to 2007-2011 WorkSafe Data for BC Municipalities, MSDs are responsible for,
  - ❖ An average of 674 claims per year (37% of all claims)
  - ❖ 43% of MSDs are over 28 days lost time

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### The Economics of Ergonomics

Average cost per claim in BC based on 2007-2011 WCB direct costs

Average Direct Cost of Injury		Indirect Costs	Total Cost Per Injury
\$6700 (Back Injury)	X	4 = \$26,800	\$33,500
		7 = \$46,900	\$53,600
\$9000 (Other Strains)	X	4 = \$36,000	\$45,000
		7 = \$63,000	\$72,000
\$14,000 (Tendinitis)	X	4 = \$70,000	\$84,000
		7 = \$112,000	\$126,000

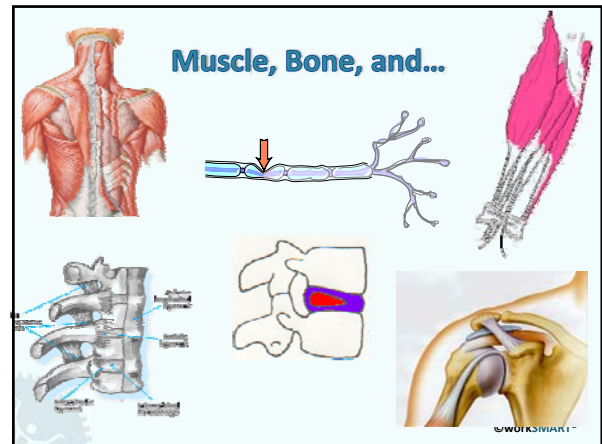
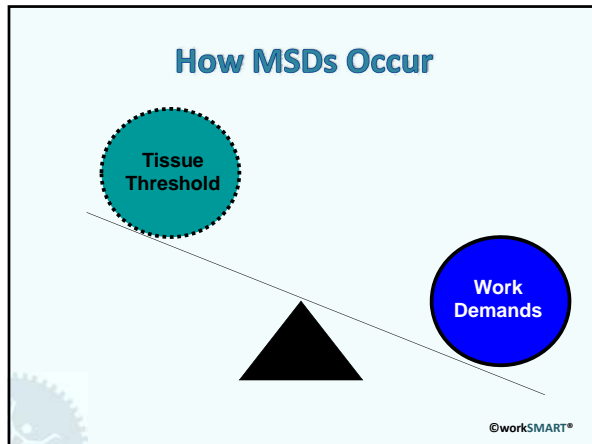
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### Defining Ergonomics

- The science of designing or adjusting work by fitting the job to the worker, not the worker to the job
- Considers our physical, physiological, biomechanical, and psychological capabilities
- Optimizes the effectiveness and productivity of work systems

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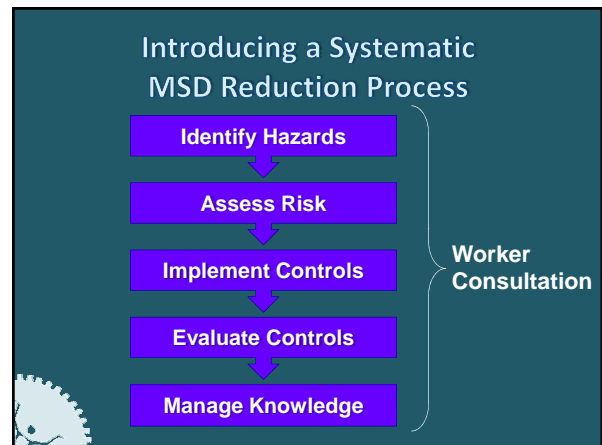
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## Pain still goes unreported... why?

- Believe pain is supposed to be part of the job
- Poor supervisory support
- Lose their job
- Fear of reprisal or being blamed
- Don't want to affect safety record
- Looked down on by others
- Think the pain isn't noteworthy... will go away on it's own
- Think nothing will change anyway
- Don't want the hassle
- Don't know what caused it
- Embarrassed

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## MSD Hazards vs Safety Hazards

- Hazards are yes or no events – they either exist, or they don't
  - ❖ You "identify" hazards
- Risk is a measurement of the significance of the hazard
  - ❖ You "assess" risks
- e.g. A frayed extension cord is a **safety hazard**

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## MSD Hazards vs Safety Hazards

- MSDs result from an accumulation of tasks or events, making it difficult to associate with a single safety hazard
- MSD hazards are based on the demands placed on the body
  - ❖ An awkward shoulder posture is an MSD hazard



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## Physical Hazards: 7 Sins

1. *Excessive Force*
2. *Awkward Postures*
3. *Static Postures*
4. *High Repetition*
5. *Contact Stress*
6. *Vibration*
7. *Environmental Influences*

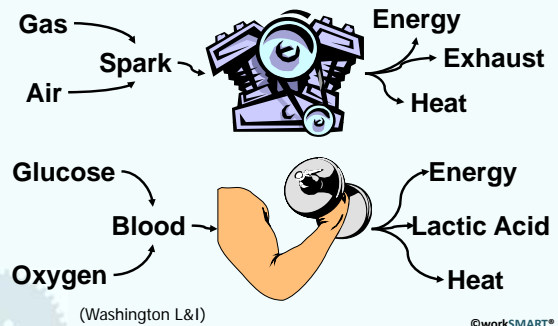


## The Role of Fatigue

- Precursor to the development of an injury
- A result of inadequate blood supply to transport oxygen to the muscle tissue during work
- If we can control fatigue, we can control most MSDs

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## Feeding our Muscles



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## 1. Excessive Force

Force is involved in all manual handling activities



Gripping



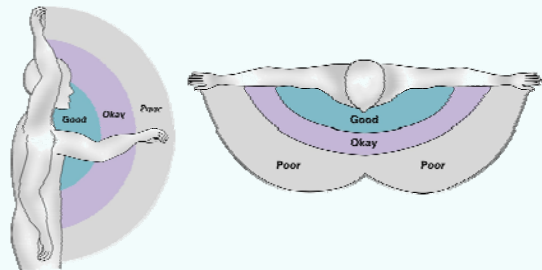
Lifting, Lowering, Carrying



Pushing and Pulling

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## Core Strength



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## 2. Awkward Postures

- Deviation from neutral posture

- ❖ Decreases force output of muscles
- ❖ Increases force applied to other soft tissues (tendons, ligaments, cartilage, etc.)



## 3. Static Postures

Muscles in constant state of contraction

↓  
Interferes with blood flow

↓  
Builds up waste products

↓  
Tissues become fatigued

↓  
Soft-tissue degeneration



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## 4. High Repetitions

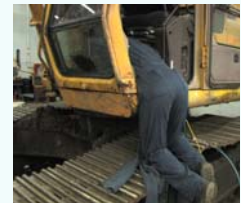
- Use of the same muscles and joints over and over again in a similar manner
  - ❖ Particularly serious when combined with awkward postures and /or forceful exertions



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## 5. Contact Stress

- Contact between soft tissues and a hard surface
- Can be repetitive (e.g. using hand or knee as a hammer)
- Can be sustained (e.g. leaning on edge of work surface, tool digging into hand, kneeling)



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## 6. Vibration

- Increases static contraction of muscles and wear and tear of soft tissues
- Two types
  - ❖ Segmental - associated with power tools
  - ❖ Whole Body – associated with vibrating ground or operating equipment



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## 7. Environmental Factors

Can be hazards on their own, or act as compounding factors

- Temperature
- Lighting
- Noise



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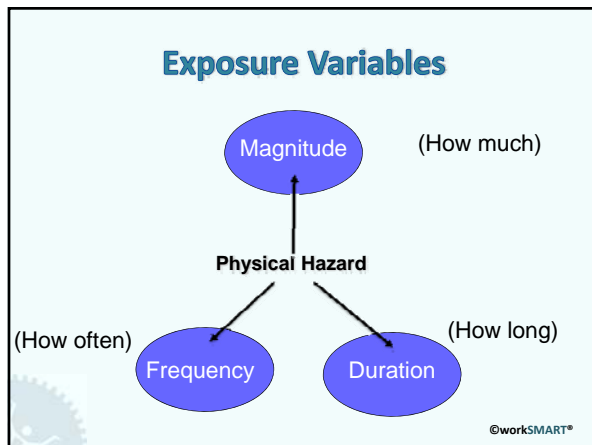


**Assessing MSD Risks**

A photograph of a worker in a blue shirt and jeans reaching up to a high shelf in a warehouse or storage area.

- An awkward right shoulder posture (reaching) is an **MSD hazard**
- Risk of a shoulder MSD depends on the exposure to that hazard

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**Assessment Tools You Will Learn**

- WorkSMART MSD Risk Checklist
- Hand Tool Vibration Database
- Online Manual Handling Calculators
  - ❖ WorkSafe BC Lift /Lower Calculator
  - ❖ WorkSafe BC Push/Pull / Carry Calculator
- Liberty Mutual Material Handling Tables

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**Engineering Controls**

- Involves physically altering,
  - ❖ Workspace design
    - Heights, reaches, clearances
  - ❖ Task design
    - Manual material handling
    - Driving/equipment operation
    - Tool handling
    - Quality control
  - ❖ Environmental design

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## Administrative Controls

- Typical administrative controls include,
    - ❖ Work Scheduling
    - ❖ Work Pace
    - ❖ Work Practices
    - ❖ Worker Training
- Rely on behavioral change;  
less effective and often  
difficult to control

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## Worker Training

- More than just classroom training
  - ❖ Reinforcement of training
  - ❖ Competency evaluations
  - ❖ Job shadowing, mentoring of new hires
  - ❖ Ongoing awareness (posters, newsletters, bulletins)
- Lifting is a skill and not everyone has the skills!

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## What you will learn

- Examples of engineering, administrative, and PPE controls specific to MSD reduction
- Biomechanical training regarding
  - ❖ Individual and team lifting, lowering, carrying techniques
  - ❖ When to push and when to pull
  - ❖ The truth about twisting
  - ❖ Safe side bending
  - ❖ Shoveling guidelines

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## You will also learn how to,

- Use WorkSMART's MSD Control Strategies in conjunction with the MSD Risk Checklist
- Perform proper brainstorming with workers
- Identify whether a control is considered high impact or low impact
- Identify the cost-benefit of individual controls before resources are spent (or wasted)

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## MSD Reduction Process



*Thank you!*

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