



Effective Interventions to Prevent Work-Related MSDs: Lessons from Systematic Review Literature

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This Afternoon ...

**Describe Origin and Purpose of IWH Prevention
Systematic Review Program**

Provide Overview of What is a Systematic Review

**Suggest 9 Evidence-Based Guidelines for MSD
Prevention**

**Make 2 Observations About The State-of-the-Science
on MSD Prevention Research**

**Finish by Being Provocative Regarding the New
Campaign**

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Steps to Provincial MSD Prevention Strategy

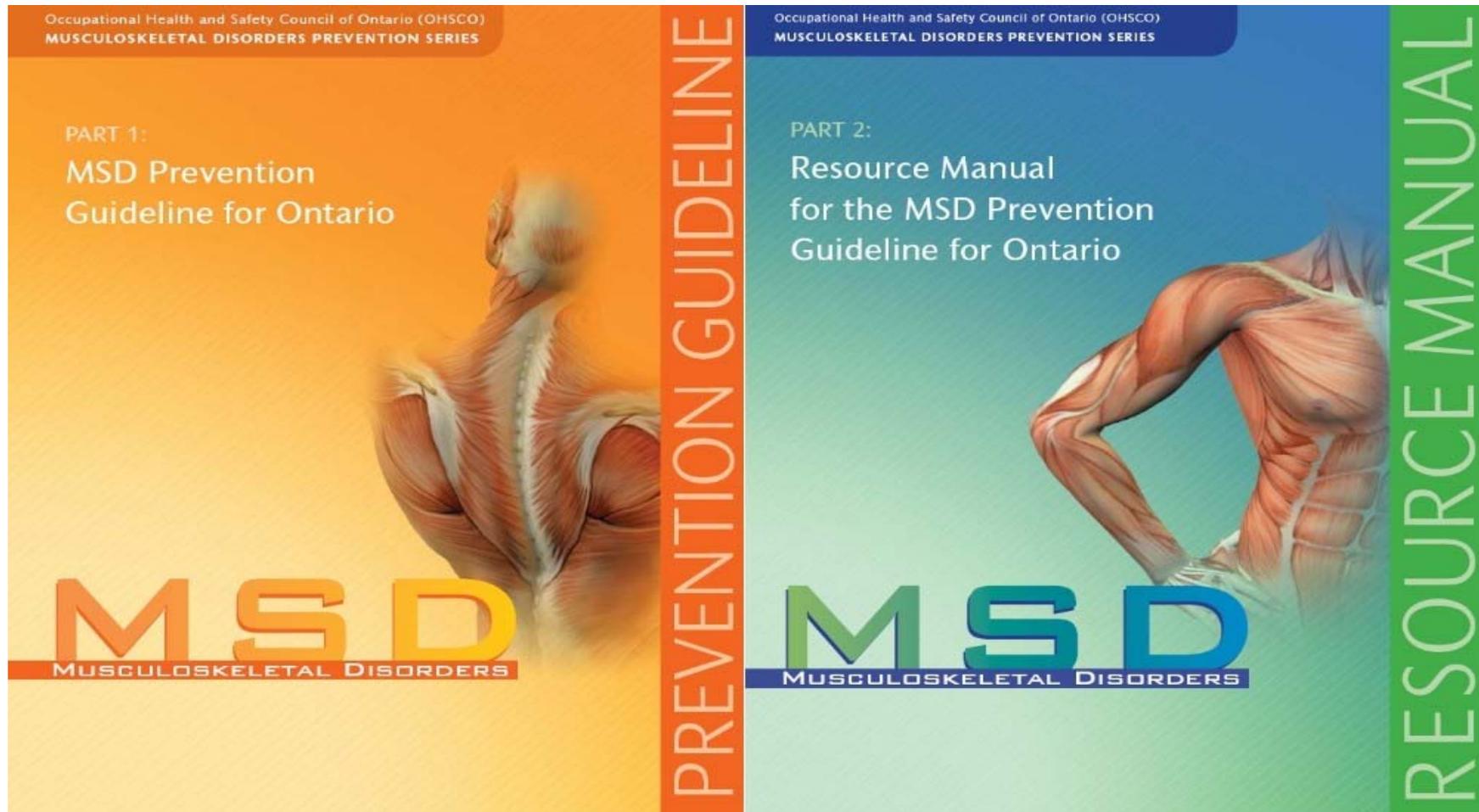
In 2005 ...

- **Minister of Labour announced High Risk/Last Chance Firm Initiative**
- **Minister of Labour established a special ergonomics sub-committee of the health and safety action group**
- **Occupational Health and Safety Council of Ontario (OHSCO) approved and endorsed a framework for an MSD prevention strategy**



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Focus on MSD's Created a Need!

Everyone wanted to know

What works?

Where do we get the evidence?

Who or what can we believe?



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IWH SR Prevention Review Program

**2005 - Research Program in Systematic Reviews
established at IWH with topic selection aligned to
provincial priority framework**

Accomplishments:

13 Reviews

8 Scoping reviews

1 Narrative review

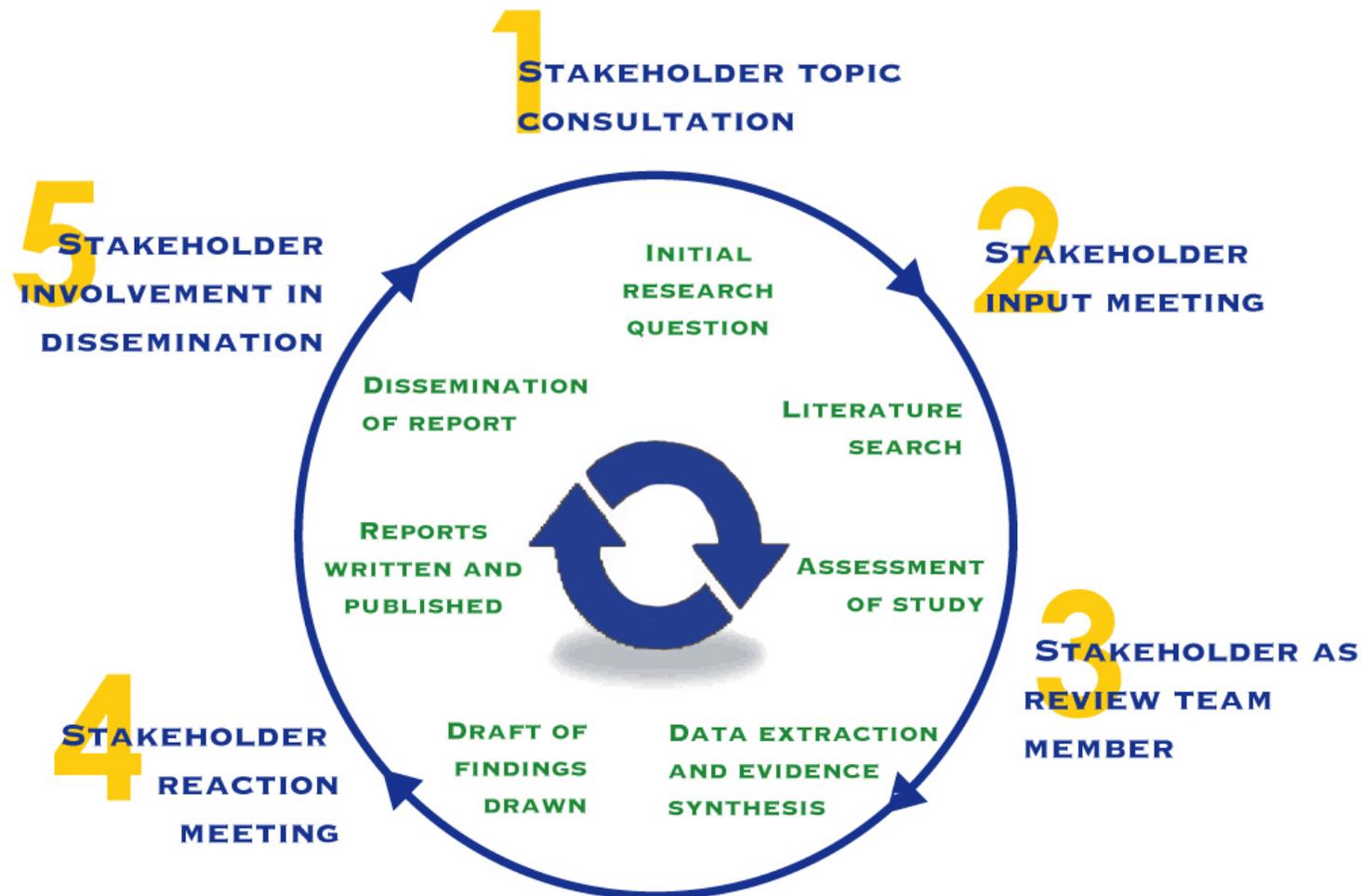
1 Methods paper

Over 120,000 articles reviewed!

**70 reviewers, 4 countries, 33 stakeholder
consultations**



Stakeholder Engagement





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Systematic Reviews Covered Today

Effectiveness Of Participatory Ergonomics Interventions

Participatory Ergonomics Interventions: Implementation And Process

**Workplace Interventions To Prevent Musculoskeletal And Visual
Symptoms And Disorders Among Computer Users**

Interventions In Health Care Settings To Improve Musculoskeletal Health

**The Effectiveness Of Occupational Illness And Injury Prevention And Loss
Control Programs**

**The Economic Evaluation Of Occupational Safety And Health
Interventions**

**A Systematic Review of the Effectiveness of Education and Training
Programs for the Protection of Workers**

**A Systematic Review of Occupational Health and Safety in Small and
Medium Sized Businesses**

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Steps of a Systematic Review

- 1) Develop question**
- 2) Conduct literature search**
- 3) Identify relevant publications**
- 4) Quality appraisal**
- 5) Data extraction**
- 6) Evidence synthesis**



Best Evidence Synthesis

Level of Evidence	Minimum Quality	Minimum Quantity	Consistency
Strong	Very High	3 studies	All very high quality studies converge on the same findings.
Moderate	High	3 studies	Majority of high and better quality studies converge on the same findings.
Limited	Medium	2 studies	Majority of medium and better quality studies converge on the same findings.
Mixed	Medium	2 studies	If there are two studies, they do not agree. If more than two, relatively equal numbers of studies support and do not support effectiveness.
Insufficient	The above criteria are not met.		



Framework for Moving Evidence in to Practice





Guideline 1: Communicate to all Parties Occupational Health and Safety Interventions have Economic Benefits

**The Business case exists for *ergonomic and other
MSD prevention programs***

Strongest in manufacturing & warehousing

**Moderate in healthcare, transportation and
administrative & support services**

**The Prevention System case can be made for multi-
sectoral *disability management programs* carried
out by insurers or government agencies**



Guideline 2: Encourage Participatory Processes

Participatory ergonomic approaches are effective in reducing musculoskeletal symptoms, injuries and workers compensation claims

Supervisors are key participants

Management and organizational participation??



Guideline 3: Attend to 6 Keys to Implementation Success

Have champion

Build and sustain management support

Commit appropriate resources

Provide appropriate technical (e.g., ergonomics) and organizational training

Assemble appropriate team

Establish effective involvement of and communication between

team members

team and management

teams and the workplaces



Guideline 4: Continually Remind Everyone There are No Quick Prevention Fixes!

Among computer users

Training alone

**Workstation adjustment
alone**

Rest breaks alone

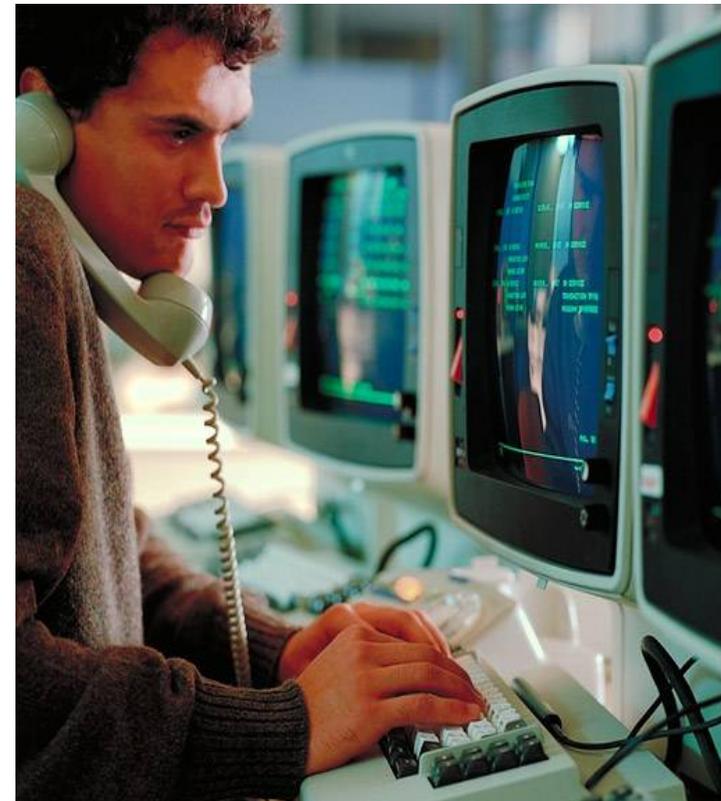
Ergonomics training alone

No evidence that magic bullets exist

Back belts

Vibration in tools

Hearing protection devices





Guideline 5: Use Education and Training Programs to Support Broader Prevention Strategies

Workplace education and training programs have a positive impact on health and safety behaviours

OHS training as a lone intervention has not been demonstrated to have an impact on injuries or symptoms

**Ergonomic Training
Biofeedback training
Job stress management training**



Guideline 6: Think Multi-Level and Multi-Component When Designing and Implementing MSD Prevention Programs

Among computer users, workstation adjustment and ergonomic training reduce MSDs

In health care, multi-component & multi-level patient handling interventions reduce MSDs

Organizational policy

Broad-based ergonomics training

Patient handling technologies

In small businesses safety audits, engineering controls, training and group motivation reduce MSDs





Guideline 7: Exercise Programs May Be A Double Bonus to the Worksite

Among healthcare workers both strength & aerobic exercises reduced injuries, lost time and disability

But be careful not all programs are created equal

More broadly exercise programs were one of only 8 occupational injury prevention and loss control programs that were evidence-based



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Guideline 8: Simple Engineering Solutions Can Work

Arm supports during work activities reduce injuries

Both manufacturing and office environments

Not all engineering solutions created equal

Consider ceiling lifts



Guideline 9: Managing Success in Small and Medium-Sized Businesses Requires More Tailored Approaches

Tight knit workplace social relations in small businesses can limit risk apprehension

OHS policy and complex contractual conditions (such as chains of subcontracting) can complicate occupational health responsibilities

Small businesses have a unique life cycle



Some Research Gaps

More research in non-office environments

Safety culture and safety climate are hot topic but insufficient research

Which components of multi-component interventions are providing more bang for your buck

Many single studies need to be replicated

Need to integrate economic analysis into intervention effectiveness studies

More Research in small and medium sized businesses

Need to understand importance of high engagement training



Scientifically Credible Research Is Doable

Research can be done that employs randomization

Controls or comparisons can be found

Productivity and cost-effectiveness data can be collected

Decision makers want scientifically credible research that has been done by those not marketing the products and replicated



Provocative Thoughts for a New Campaign

Simple – may be too constraining

If the decision is based on most significant public health problem then reasonable solution is complex

Partnering may be a key point to emphasize multi-level – to solution is shared responsibility

“Friends don’t let friends get MSDs”

Ben’s vote – focus on lifting/carrying – “Zero Lifts”



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Thanks for all of the hard work by review team members, IWH staff and stakeholders!





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