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

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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
<table>
<thead>
<tr>
<th>Level of Evidence</th>
<th>Minimum Quality</th>
<th>Minimum Quantity</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td>Very High</td>
<td>3 studies</td>
<td>All very high quality studies converge on the same findings.</td>
</tr>
<tr>
<td>Moderate</td>
<td>High</td>
<td>3 studies</td>
<td>Majority of high and better quality studies converge on the same findings.</td>
</tr>
<tr>
<td>Limited</td>
<td>Medium</td>
<td>2 studies</td>
<td>Majority of medium and better quality studies converge on the same findings.</td>
</tr>
<tr>
<td>Mixed</td>
<td>Medium</td>
<td>2 studies</td>
<td>If there are two studies, they do not agree. If more than two, relatively equal numbers of studies support and do not support effectiveness.</td>
</tr>
<tr>
<td>Insufficient</td>
<td>The above criteria are not met.</td>
<td></td>
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Framework for Moving Evidence in to Practice

- Actionable Messages
- Systematic Reviews of Research
- Single Studies, articles and reports
- Basic Science, theoretical and methodological innovations
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

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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??

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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

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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.

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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

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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

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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

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

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

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