



Occupational  
Health Clinics  
for Ontario  
Workers Inc.

Centres de  
santé des  
travailleurs (ses)  
de l'Ontario Inc.

## Psychosocial Ergonomics

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OHCOW Windsor Clinic

### Presentation Overview



- ❖ What is Psychosocial Ergonomics
- ❖ Psychosocial Risk Factors
- ❖ Statistics
- ❖ Workplace Implications
- ❖ Legislation
- ❖ MSDs & Psychosocial Ergonomics
- ❖ Literature
- ❖ Prevention, Assessing & Interventions
- ❖ CWHS Programs
- ❖ Questions



## Ergonomic Risk Factors



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## What is Psychosocial Ergonomics



- Non-physical aspects of the workplace developed through culture, policies, expectations and social attitude
- The way workers interact with the job demands and their work environment

**Stimulus** → **Response** → **Outcome**

- Workers perception of the demand; Can I deal with it?; if not they will experience stress

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Source: Canadian Centre for Occupational Health & Safety  
Source: Taylor & Green, 2015

## What is Psychosocial Ergonomics



Three areas to consider:

1. Factors associated with the job and work environment
2. Factors associated with demands outside of work (i.e. children, spouse)
3. Characteristics of the individual
  - Genetic (i.e. gender, intelligence)
  - Acquired (i.e. social class, education)
  - Dispositional (i.e. personality, attitude)

Source: NIOSH, 1997

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## Examples of Psychosocial Factors



- **Job demands:** time pressure, work pace, workload, rest breaks
- **Job control:** lack of participation in decisions, level of influence on work and work outcomes
- **Job satisfaction:** variability vs. monotony, opportunities for development, challenges vs. poor skill utilization
- **Support:** social and emotional support from co-workers and family

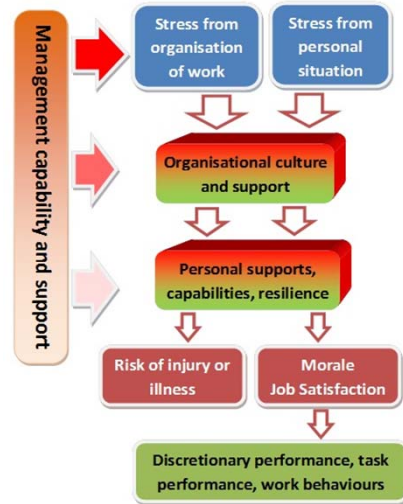
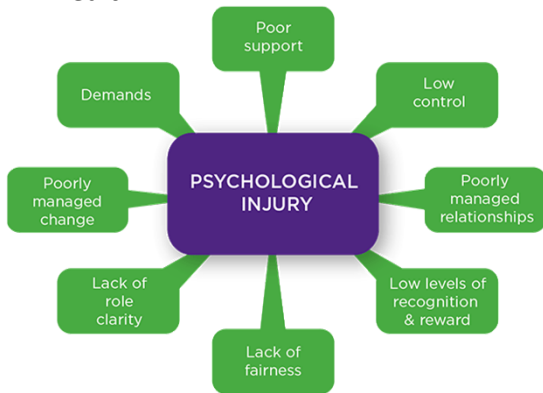
Source: Canadian Centre for Occupational Health & Safety

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# Psychosocial Factors



- Work-related stressors that negatively affect the workers mental and physical health:

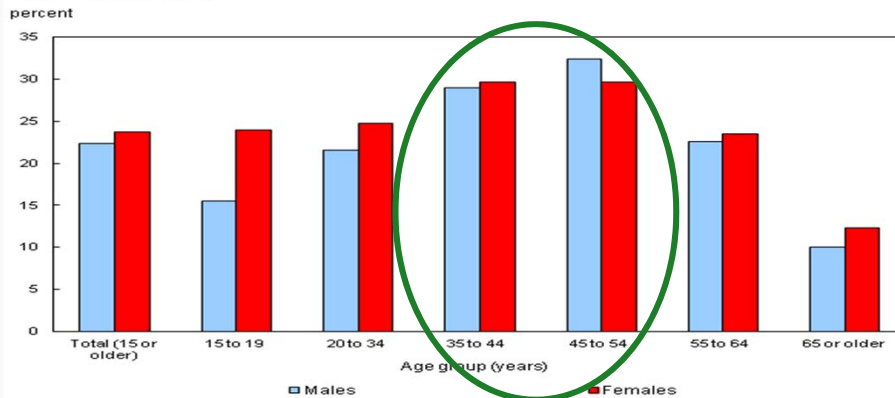


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# Statistics



**Chart 2**  
Percentage reporting most days "quite a bit" or "extremely stressful", by age group and sex, household population aged 15 or older, Canada, 2014



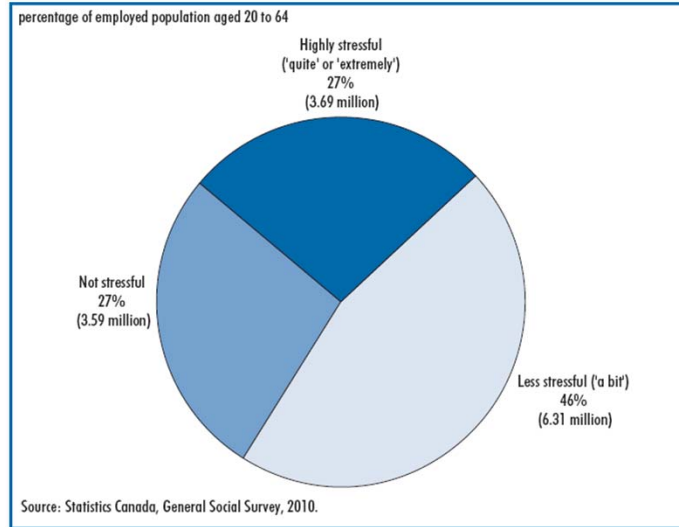
Source: Canadian Community Health Survey, 2014.

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## Statistics



- Over ¼ of working adults say their lives are very stressful



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Source: Statistics Canada

## Statistics

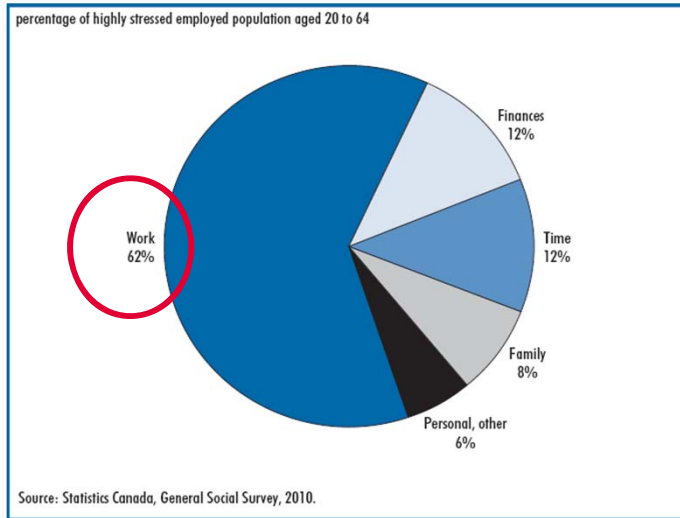


- 3.7 million working adults feel high stress levels
- 6.3 million (46%) say they are a “bit” stressed
- 6 in 10 highly stressed workers identify WORK as their main source of stress
- ¾ of employees believe that workers have more on the job stress than a generation ago (NIOSH, 2014)

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Source: Statistics Canada

# Statistics



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Source: Statistics Canada

# Statistics



Poor mental health not only hurts the individual, it also impacts an organization's bottom line and ability to thrive. Having the support of their workplace can make a world of difference for workers with mental health issues.



20 billion of which results from work related causes

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Source: CCOHS

## Statistics



- 47% of working Canadians consider their work to be the most stressful part of their day
- Affect mid-career workers the most. Lowering the productivity of the Canadian workforce
- Only 23% of Canadian workers would feel comfortable talking to their employers about a psychological health issue

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Source: Psychological Health in the Workplace,  
Employment and Social Development of Canada, 2016

## Demographics



- Report more stress if:
  - Management, professional and clerical occupations
  - Having children
  - Divorced or in a common law relationship
  - Self-employed
  - Earning less than \$40,000 or more than \$80,000 annually
  - Sex and level of education was NOT a predictor of increase stress

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Source: Statistics Canada

## Demographics



- Those who report **WORK** as their main source of stress:
  - 55% were men
  - 43% were age 35-49
  - ¾ lived in metropolitan area
  - 43% lived with spouse and kids
  - Household income over \$100,000
  - ¾ had a college or university education



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Source: Statistics Canada

## Statistics/Info - AIS



- Job stress is the major source of stress for American adults
- Increased levels of job stress is associated with having little control over work but lots of demands
- Difficult to determine the most stressful jobs because it depends on the person-environment fit. We all thrive in different environments
  - Example: A survey showed that having to complete paperwork was more stressful for many police officers than the dangers associated with pursuing criminals

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## Why are Psychosocial Risk Factors Important



- 19% of individuals have quit a previous position because of job stress
- 12% of employees have called in sick because of stress
- Over half of American employees often spend 12 hour days on work related duties
- 62% routinely find that they end the day with work-related neck pain, 44% reported stressed-out eyes, 38% complained of hurting hands and 34% reported difficulty in sleeping because they were too stressed-out

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## Workplace Implications



1. Decrease in productivity due to absenteeism, reduced work output
  - In a survey of 800,000 workers from 300 companies the number of sick calls due to stress has tripled between 1996 and 2000 (AIS)
2. Decrease in quality
3. Increase in injuries, leading to increase in WSIB costs
4. Decrease in morale

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Source: Statistics Canada & American Institute of Stress

## Legislation



- Changes in legislation to allow for entitlement for chronic mental stress
- Bill 127, Stronger, Healthier Ontario Act
- Schedule 33, Workplace Safety & Insurance Act, 1997
  - Worker is entitled to benefits for chronic or traumatic mental stress arising out of and in the course of the worker's employment
  - Came into effect January 2018

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Source: WSIB, 2017

## WSIB



**Generally, the distinction between traumatic and chronic mental stress is the nature of the stressor(s)**

### Traumatic Mental Stress

Involves work-related events that are generally accepted as **traumatic in nature**

**Example:**

*A grocery store clerk is held up at gunpoint*

vs.

### Chronic Mental Stress

Involves work-related events that are **non-traumatic in nature**

**Example:**

*A grocery store clerk is subjected to humiliating jokes, demeaning conduct, and persistent criticism by a co-worker over several years*

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Source: WSIB, 2017

## WSIB



- Chronic mental stress is caused by a substantial work-related stressor or series of stressors
- Considered substantial if it is excessive in intensity and/or duration compared with the normal pressures and tensions experienced by people in similar circumstances
- Examples of chronic mental stress: harassment, bullying, persistent criticism
- Terminations, demotions, transfers, discipline, productivity changes and change in working hours DO NOT constitute chronic stress

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Source: WSIB, 2017

## The New CSA Standard Z1003-13

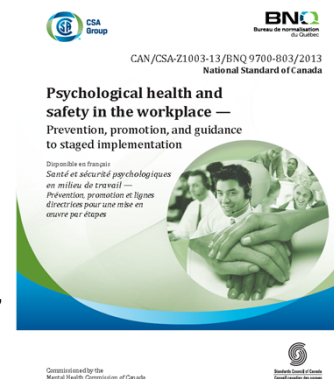


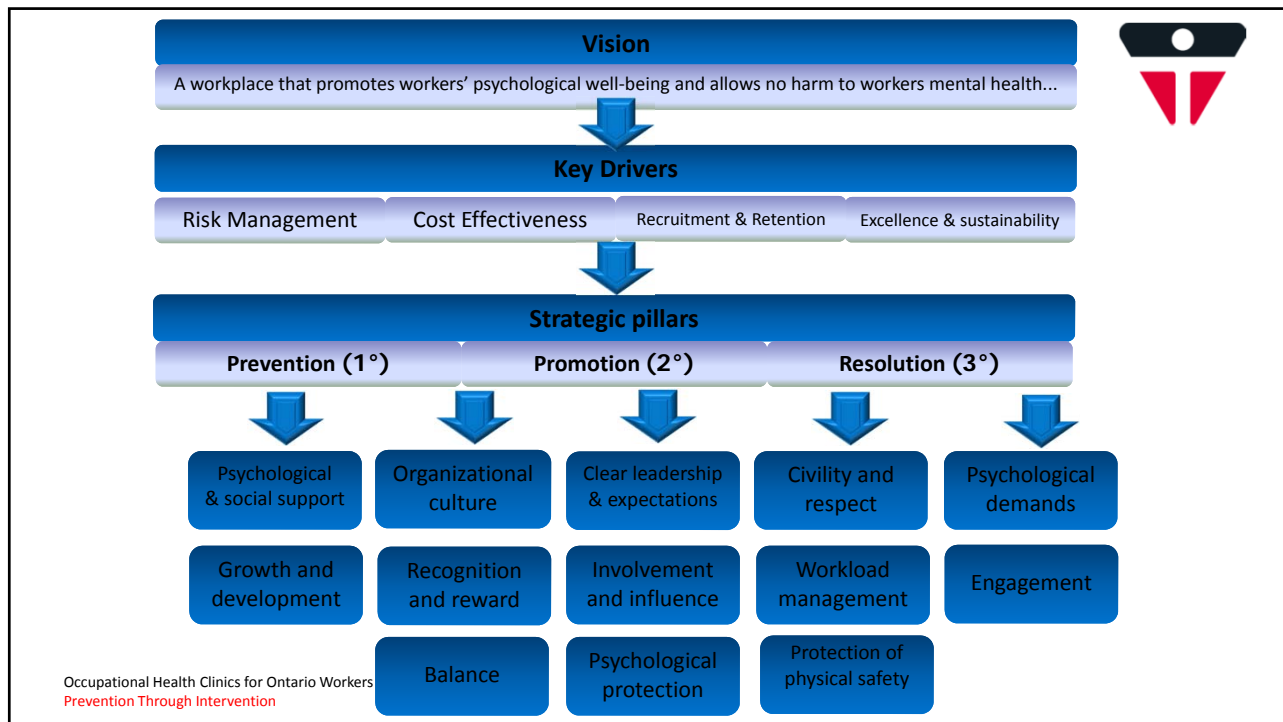
### Coding of Work Injury or Disease Information

- Occupational Disease is defined as a disease associated with exposure to chemical, physical, biological, ergonomic or psychosocial hazard in the workplace
- Required to identify these hazards; implement a plan to control, assess, evaluate, educate and prevent these hazards

[http://shop.csa.ca/en/canada/occupational-health-and-safety-management/canca-z1003-13bnq-9700-8032013/invt/z10032013/?utm\\_source=redirect&utm\\_medium=vanity&utm\\_content=folder&utm\\_campaign=z1003](http://shop.csa.ca/en/canada/occupational-health-and-safety-management/canca-z1003-13bnq-9700-8032013/invt/z10032013/?utm_source=redirect&utm_medium=vanity&utm_content=folder&utm_campaign=z1003)

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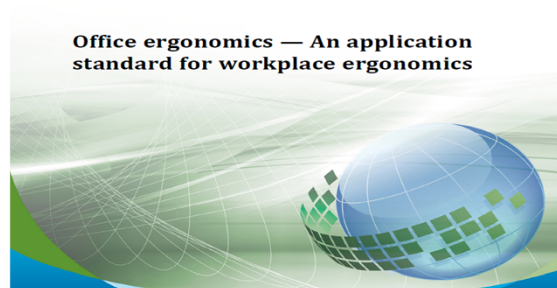


## CSA **NEW** "Office Ergonomics" Standard

- Standard released in December of 2017; replacing the previous "guideline"
- Standards are "enforceable"
- The standard provides ergonomic requirements specific to the office workspace



Z412-17



## CSA **NEW** “Office Ergonomics” Standard



The standard includes requirements for:

- Psychosocial workplace factors and psychological health factors

Organizations shall establish, implement, and maintain a procedure to identify psychosocial workplace factors, which, if not addressed, are hazards in an office environment. These factors include:

- Expectations that are not clearly expressed
- High cognitive job demands
- Lack of involvement and influence
- Ineffective opportunities for workload management
- Poor employee engagement
- Lack of protection of physical safety

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## Ergonomic Process



**Needs to be implemented in the occupational health and safety management system**



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## MSD's and Psychosocial Ergonomics



### How do Psychosocial factors contribute to MSD development?

- Stress creates a wide variety of behavioural, psychological and physiological responses within a person which can facilitate in the development of MSDs



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Source: CCOHS, 2017

## MSD's and Psychosocial Ergonomics



### High Work Demands & Mental Load:

- Direct impact on forces applied
- Increase muscle activity and tension
- Reduce muscle relaxation/increase muscle fatigue
- Increase sensitivity to pain (changes in central nervous system)
- Decrease frequency of breaks and micropauses
- Physiological changes
- Change perceptions of work situations

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Source: Taylor & Green, 2015

## Behavioural Responses



### Behavioural Responses

- Responses taken by a person that they are unaware of, or that they perceive may help them cope with the stress placed upon them

### Examples:

1. Individual avoids the workplace to avoid pain
2. Tasks become frustrating and the individual may use excessive force when performing tasks
3. Psychosocial factors that cause negative stress may cause the worker to develop a sedentary and dependent lifestyle

## Psychological Responses



### Psychological Responses

- How stress is perceived by the individual
- Positive stress vs. **Negative** stress

### Examples:

- Feelings of uncertainty, disinterest, boredom and anxiety
- Directly relate to psychosocial risk factors:
  - lack of job control, excessive job demands, low job satisfaction and lack of social support

## Physiological Responses



### Physiological Responses

- Changes that people experience due to stress are intended to prepare a person to physically resolve dangers, problems or challenges in the short-term time range

### Examples:

1. Increase in muscle tension which can lead to pressure on and around joints, ligaments, nerves and may cause excessive force
2. Body remains at a heightened state of sensitivity which may cause a person to lift more, work harder etc. (stuck in “stress mode”)

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Source: CCOHS, 2017

## Physiological Responses



- Responses occur unconsciously
- Initial stages of a stress response are characterized by:
  - High levels of hormone production
  - Energy release
  - Muscle tension
  - Increased Heart rate



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Source: CCOHS, 2017



## Psychophysiological Explanation



### Cinderella Hypothesis (Hagg, 1991)

- Low threshold motor units turn on first and shut off last
- When the muscle is activated for a long time these motor units become exhausted and overloaded leading to the degenerative process and pain development
- Research shows that this “physical activation” only accounts for 33% of the development of MSDs



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Source: Tomaschek, Lanfer, Melzer, Debitz & Buruck, 2018

## Psychophysiological Explanation



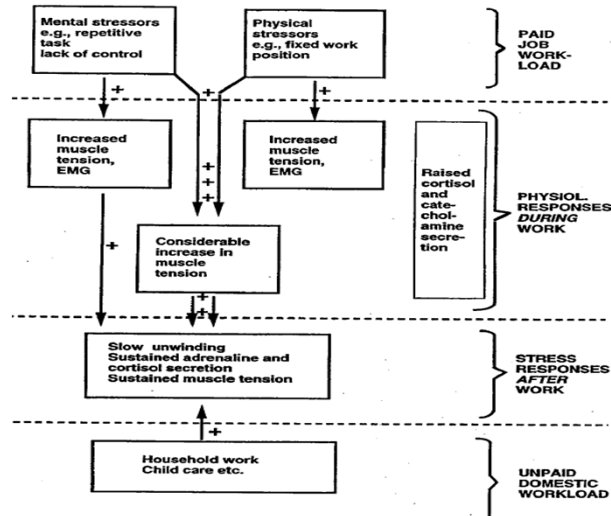
### Expanded Cinderella Hypothesis:

- Merlin & Lundberg, 1997 included psychosocial aspects as additional risk factors for MSDs
- Same motor units activated by physical demands and mental stress
- So even at rest stress could be causing low threshold motor units to be active
- A study of German pension fund found that the relative risk of early retirement increased by 67% as a result of both physical and psychosocial risk factors compared to the exposure of physical risks only (Sigrist & Dragano, 2007)

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Source: Tomaschek, Lanfer, Melzer, Debitz & Buruck, 2018

## Extended Cinderella Hypothesis



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Source: Melin & Lundberg, 1997

## Research



Experiment to see if the same work motor units activated by mental stress as by physical demands

- 14 people exposed to mental stress (math arithmetic, stroop colour word) and physical demands (standard referenced contraction) in a lab
- Measured muscle activity of the upper back, neck and shoulder through EMG
- Mental stress induced a significant increase in muscle activity and heart rate
- In 12 out of the 14 participants one or more motor units were found to be active in mentally as well as physically induced muscle contraction
- Concluded that lack of mental rest is an important risk factor for development of muscular pain

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Source: Lundberg et al. 2002

## Research: Upper Extremity Disorders



NIOSH reviewed 17 studies from 1983-1994 relating to upper extremity disorders and psychosocial factors

- Psychosocial factors that have a positive association:
  - Intensified workload
  - Monotonous work
  - Low levels of social support
  - Lack of control
  - Job dissatisfaction



Source: NIOSH, 1997

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## Research: Back Disorders



NIOSH reviewed 13 studies from 1973-1994 which examined back disorders and psychosocial factors

- Psychosocial factors with a positive relationship
  - Intensified Workload (perceived pressure and workload)
  - Job dissatisfaction
  - Monotonous Work (mixed relationship)



Source: NIOSH, 1997

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## Occupation Specific Research



### Automobile Repair Garages (24)

- Low decision authority and job control (breaks, speed, decisions, etc.) predicted neck pain and low back pain

### Healthcare Workers (25)

- Low job control was found to put workers at an increased risk for low back and lower extremity injuries

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## Occupational Specific Research



### Computer Users

- High mental load increases muscle tension and may negatively affect an individual's immune system
- High work demands may have a direct impact on forces applied and postures
  - ex: striking keys harder and slouching when trying to work fast



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## Occupational Specific Research



Investigated the interaction between physical and psychosocial risk factors and development of MSDs

- Study looked at delivery drivers, MMHs, technicians, customer service operators and general office support
- 4 exposure groups: high physical/high psychosocial, high physical/low psychosocial, low physical/high psychosocial, low physical/low psychosocial
- Concluded that workers highly exposed to both physical and psychosocial workplace risk factors were more likely to report symptoms of musculoskeletal disorders than workers highly exposed to one or the other

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Source: Devereaux, Vlachonikolis & Buckle, 2002

## Positive Relationship, Now What?

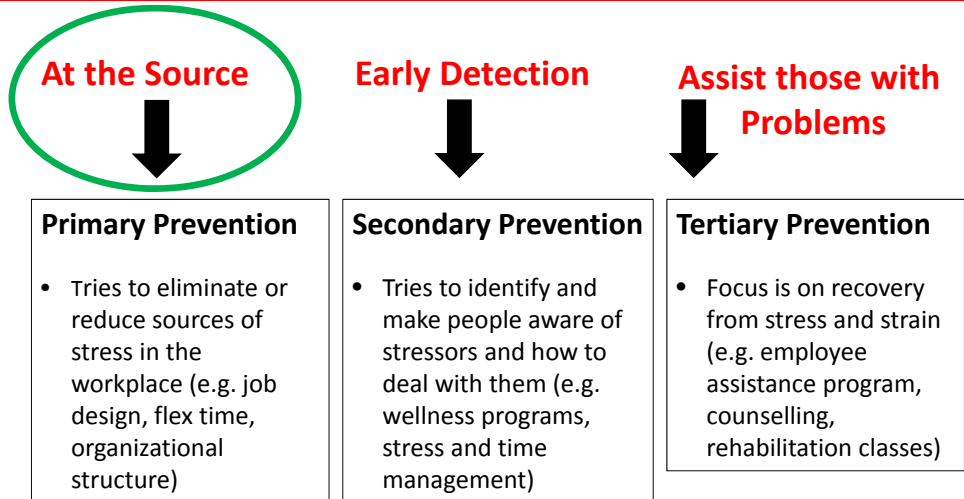


### So now what?

Statistics and research support there is a relationship between psychosocial workplace factors and MSDs **BUT** how do we know if this is an issue in our organization??

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## Prevention Levels



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Source: IRSST, 2006

## Assessing Psychosocial Hazards



It is important to identify the STRESSORS in the workplace prior to proposing an intervention

### Checklists

- List factors that can be used to review workplace conditions
- Effective if the reviewers have a good understanding of the relationships in the workplace and are trusted by the workers



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Source: OHCOW, MIT, 2012

## Assessing Psychosocial Hazards



### Questionnaire

- Objective, allows anonymity, confidential
- There are several questionnaires available however one of the most widely accepted is the Copenhagen Psychosocial Questionnaire (COPSOQ)
- COPSOQ includes symptoms associated with psychosocial factors; therefore can distinguish between risk factors that are associated with symptoms from those that are not; therefore you can link the exposures with health effects

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Source: OHCOW; MIT, 2012

## Mental Injury Toolkit (MIT)



Developed by OHCOW as a guide and resource kit to provide workers with a basic understanding and place to start when learning about workplace stress

- Includes: definitions, common causes of mental distress, legal frameworks, possible actions to take, and resources available
- StressAssess link which is a web-app allows for both personal and organizational version of the questionnaire
- Provide results
- Uses the COPSOQ



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Source: OHCOW; MIT, 2012

## Measure workplace stress



- 25 screening questions about work demands, organizational factors, relationships, workplace values, H&S concerns, stress symptoms and offensive behaviours
- Scored in comparison to a reference population
- App is for individual use
- Provides recommendations for improvements

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Source: OHCI

## Effective Interventions



### Prioritize stressors and focus interventions

- Have a purpose and goal
- Low-hanging fruit

### Participation

- Participation at all levels is the key for buy in, support and commitment

### Systematic Risk Assessments

- Assessing the psychosocial hazards in the workplace in order to identify and address key stressors in the workplace



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Source: IRSST, 2006



## Effective Interventions



### Models for Intervention

- Have a process model for planning interventions
- Needs to be understandable, representative of the workplace

### Intervention must be Ongoing

- As current stressors are resolved; new stressors will likely emerge
- Stress management is ongoing and imperative for good business

### Educating Employers

- Increase employers awareness of stressors in the work place and educate them on strategies to resolve them

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Source: IRSST, 2006

## Interventions



Interventions have shown to be successful in suppressing psychosocial risk factors and reducing MSDs. Studies have found that:

- Supervisor awareness of MSD problems linked to decrease in pain
- Participation in ergonomics training associated with an increase in perceived job control; decrease in work disability



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Source: Wellnomics, , 2015

## Interventions Con't



Found that:

- Group based interventions improve an individual's response to the demands of their work (i.e. good postures, optimal workstation adjustments)
- Interventions led to an increase use of breaks, exercise software, and less working hours without breaks
- Increased perceived social support

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Source: Wellnomics, , 2015

## Workplace Programs



Implement a Comprehensive Workplace Health & Safety Program

- Components include:
  - Occupational health and safety
  - Psychosocial work environment
  - Workplace health promotion
  - Organizational community involvement

Includes, strategies, initiatives and policies developed collectively by the employer and employees to continually improve or maintain the quality of life, health and well-being of the workforce



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Source: CCOHS, 1997-2017

## Workplace Programs



- These 4 components overlap and must be integrated within a CWHS program

To develop and maintain a CWHS program and continual improvement process you must:

- Lead (management leadership and commitment)
- Plan (organize)
- Do (implement)
- Check (evaluate)
- Act (improve)



Source: CCOHS, 1997-2017

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## Workplace Programs



### BENEFITS OF A PSYCHOLOGICALLY HEALTHY WORKPLACE



- engagement
- morale
- satisfaction
- retention and recruitment
- productivity



- absenteeism
- grievances
- health costs
- medical leave/disability
- workplace injuries

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Source: Canada.ca/workplace-health-safety

## Employers



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Source: Canada.ca/workplace-health-safety

## Employees



Ways for employees to practice mental fitness:

- Schedule “me time” daily
- Reward yourself
- Play to your strengths
- Ask for and offer help
- De-stress your diet
- Press pause once in a while- downtime is good
- Get regular physical activity
- Set goals and stay on target with a journal
- Practice relaxation techniques and get enough sleep
- Choose a positive attitude

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Source: CCOHS, 1997-2017



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