



What work-related risk factors do MSI and psychological injury have in common?

Presenters:

Heather Johnston & Dwayne Van Eerd

RSI Day 2022 – February 28th, 2022

Outline

Activity	Engagement	Time
Introduction <ul style="list-style-type: none">• Who we are• Review from last year• Background• State of Literature• Case Scenario	Didactic	20 – 25 min
Breakout Sessions <ul style="list-style-type: none">• Categorizing Risk Factors• Listing tools/techniques• Discussing challenges	Active	20 – 25 min
Break		
Summary & Next Steps <ul style="list-style-type: none">• Report on Breakouts• Revisit Case Scenario• List tools/techniques• Describe next steps	Didactic	15 min


Who we are

Heather Johnston

- Background:
 - Biomechanics & Ergonomics
 - Health Psychology
- Research Interests:
 - Musculoskeletal (MSI) mechanisms
 - Workspace Design
 - Workplace based injury prevention

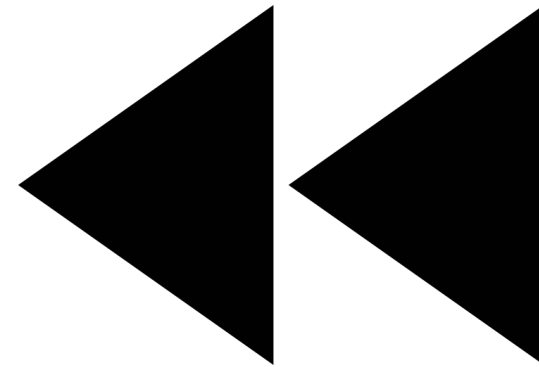
Dwayne Van Eerd

- Background:
 - Kinesiology, ergonomics
 - Rehabilitation (MSI)
 - Knowledge transfer
- Research interests:
 - Workplace-based injury prevention
 - Prevention of work disability
 - Research to practice



Do you, as part of your job, assess or identify injury risk factors at a workplace?

Polling Question 1



RSI Day 2021

MSI and psychosocial hazards in the workplace: A brief timeline

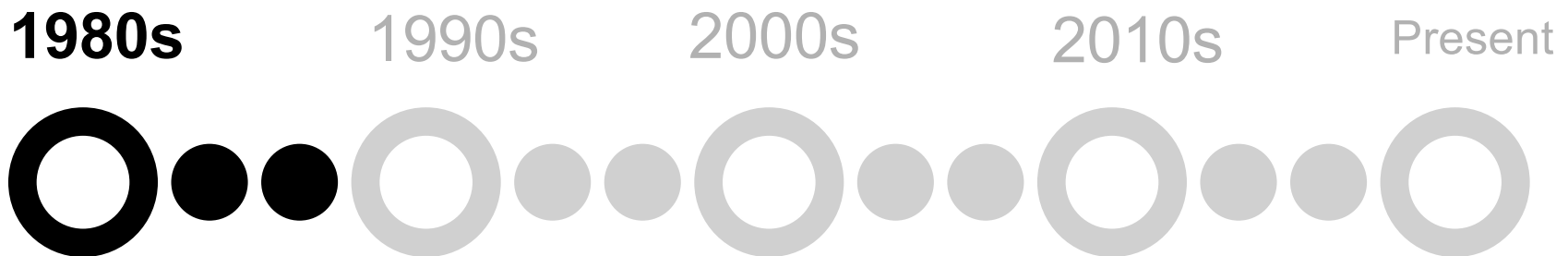
1980s – are MSIs real?

- History**
- ‘Epidemic’ of RSI in Australia (upper extremity only)
 - Invisible, hard to manage, affected people differently, etc.

- Terms**
- RSI, CTD, OOS, OCD and difficulty with diagnosis

- Research Emphasis**
- Causation, diagnosis

- Key Factors**
- Physical: repetition, duration, static posture, force



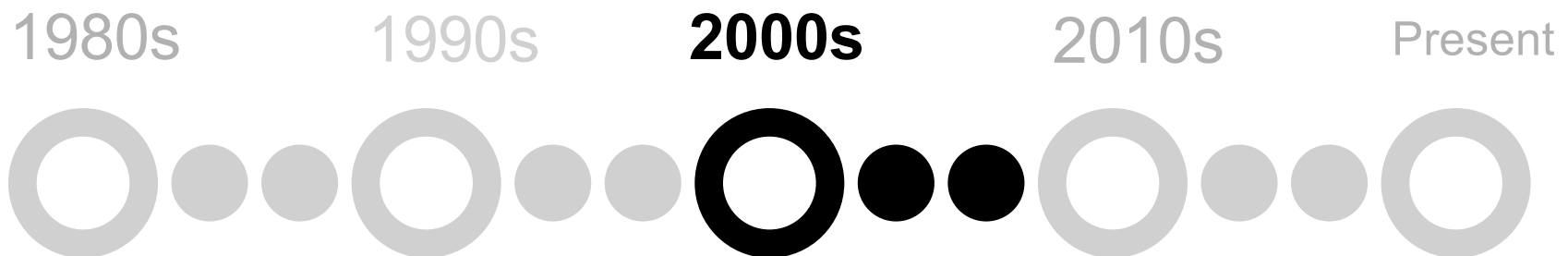
2000s

History • Psychosocial factors coming to the surface

Terms • Instead of WMSD terms: MSD and MSI including LBP

Research Emphasis • Intervention research, psychosocial interventions (e.g. stress management)

Key Factors • Job demands, job control, effort/reward balance



Workplace Standard



CSAZ1003: Psychological Health and Safety in the Workplace

- Concern about mental health in the workplace
 - Invisible, hard to manage, affected people differently, etc.



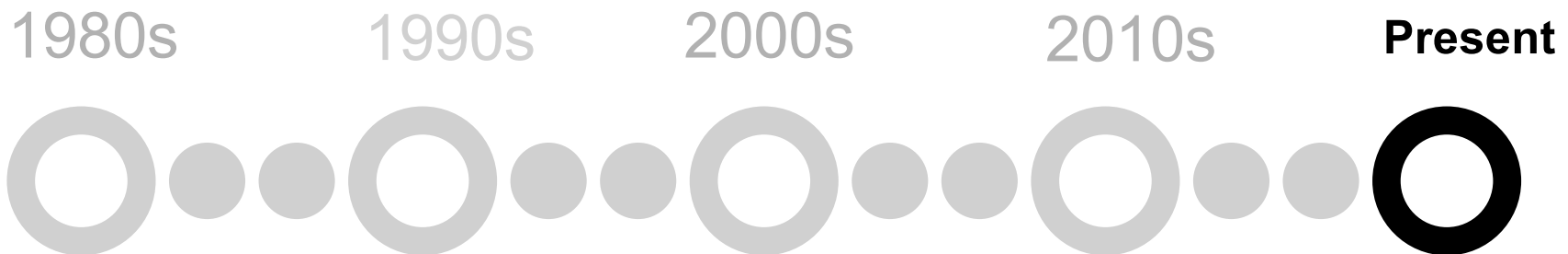
Present

History • MSD & MSI on the back burner, new concerns (COVID, remote work)

Terms • MHI, Psychological Injury

Research Emphasis • MHI and psychosocial factors, health promotion and implementation

Key Factors • Mental health (individual and work-related), monotonous and remote work

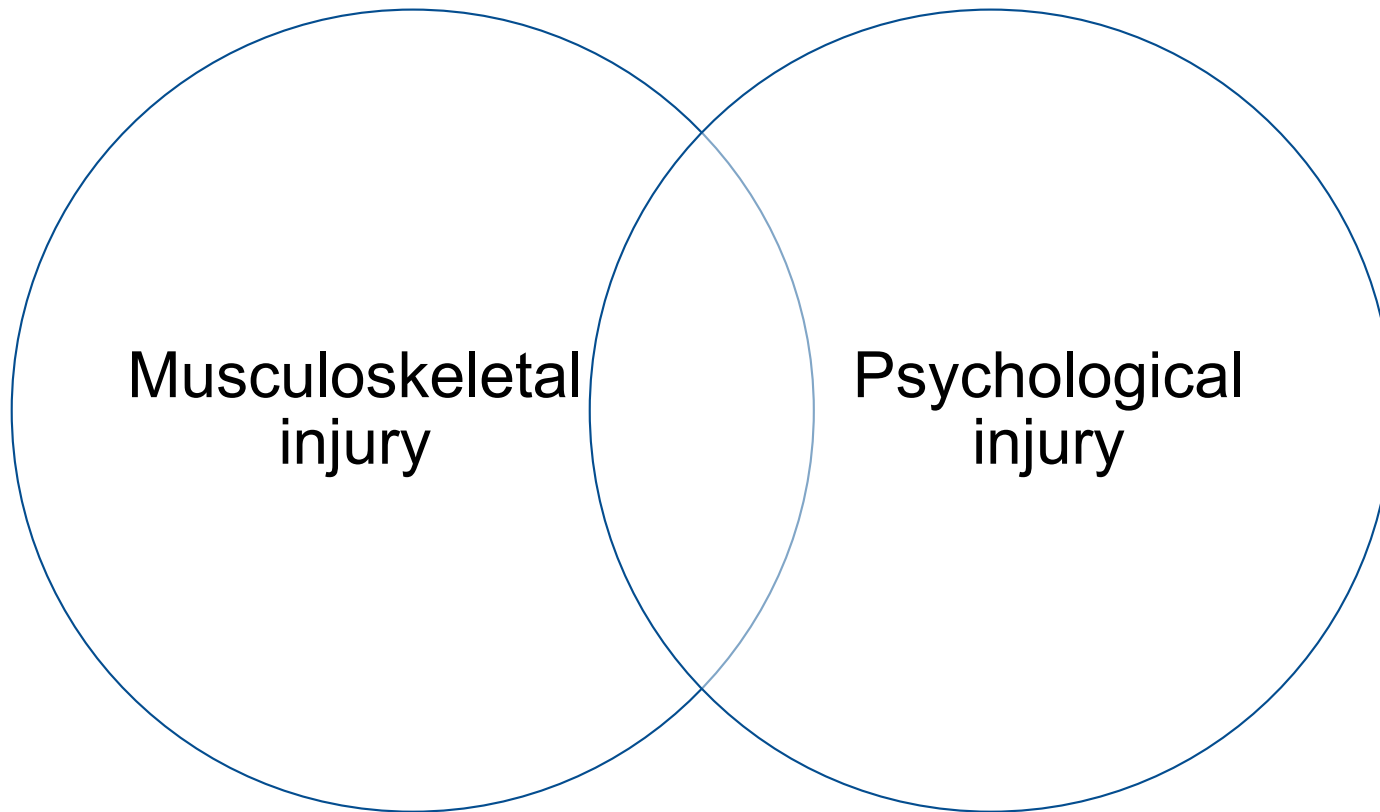


What work-related risk factors do MSI and psychological injury have in common?

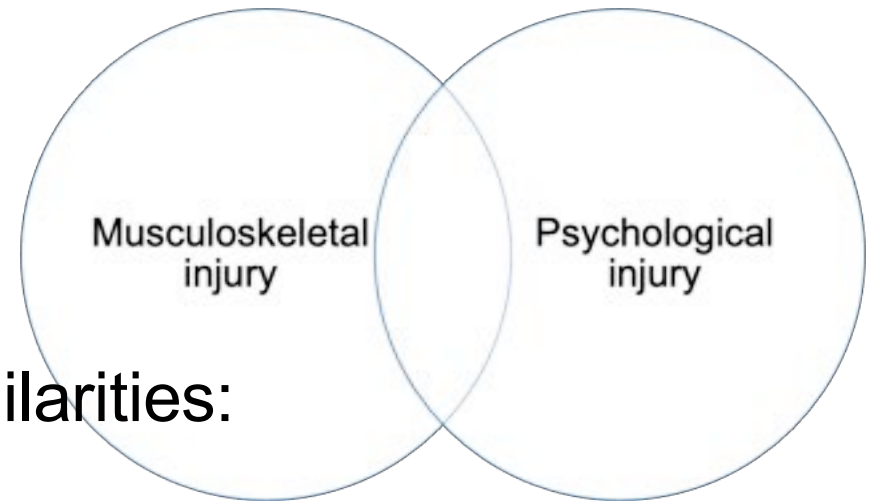
Psychological Injuries in Workplaces

- A compensable claim for psychological injury can arise as an **injury by itself with no physical injury** or **as a result of a physical injury**.
- Compensable, stand-alone psychological injuries can be caused by:
 - a chance traumatic event occasioned by a physical or natural cause;
 - a wilful and intentional act that is not the act of the worker; or
 - a **traumatic event**, or **cumulation of traumatic events**, related to the worker's work or workplace.

Work-Related Injury



Work-Related Injury



As described, there are many similarities:

- Historical challenges
- Research focus & progress
- Relevance to workplaces & compensation boards
- Risk Factors

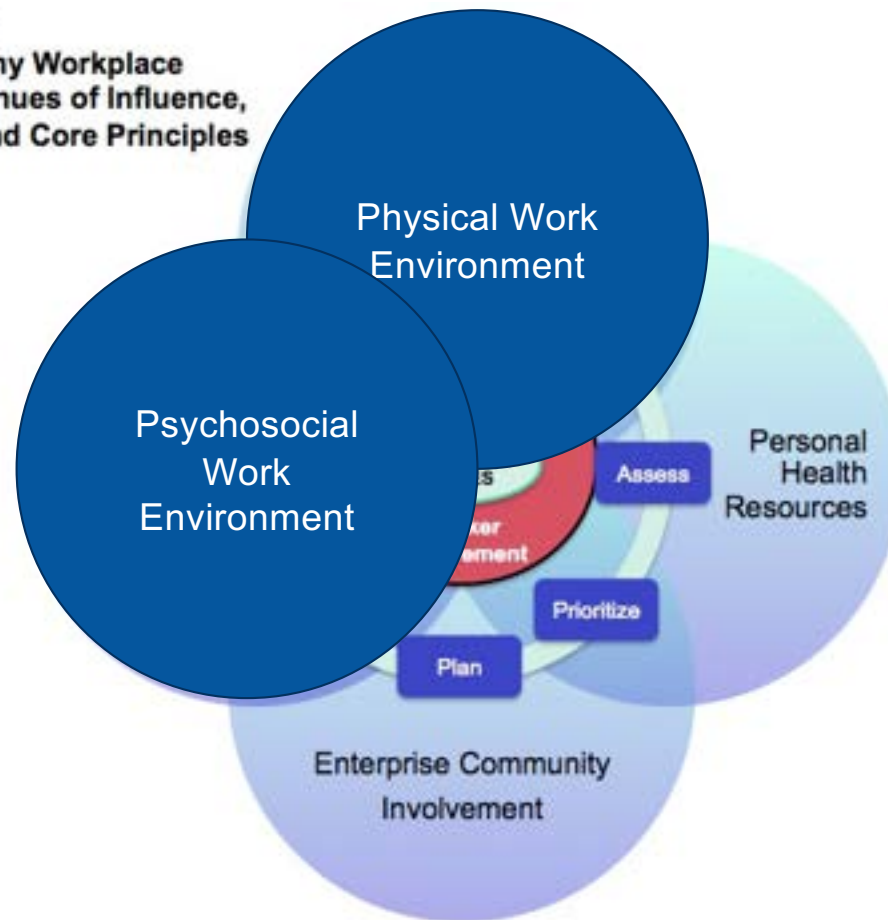


Do you feel psychosocial risks are important to consider for musculoskeletal injuries (MSI)?

Polling Question 2

Healthy Workplace Model - WHO

Figure ES1
WHO Healthy Workplace
Model: Avenues of Influence,
Process, and Core Principles



Psychosocial Factors

- Literature goes back to the 80s
- More focus on physical factors historically

(Bongers et al. 1993, Sauter and Swanson 1996, Smith and Carayon 1996, Bernard and Fine 1997, Carayon et al. 1999, Hoogendoorn et al. 2000)

Early Research: Psychosocial Factors

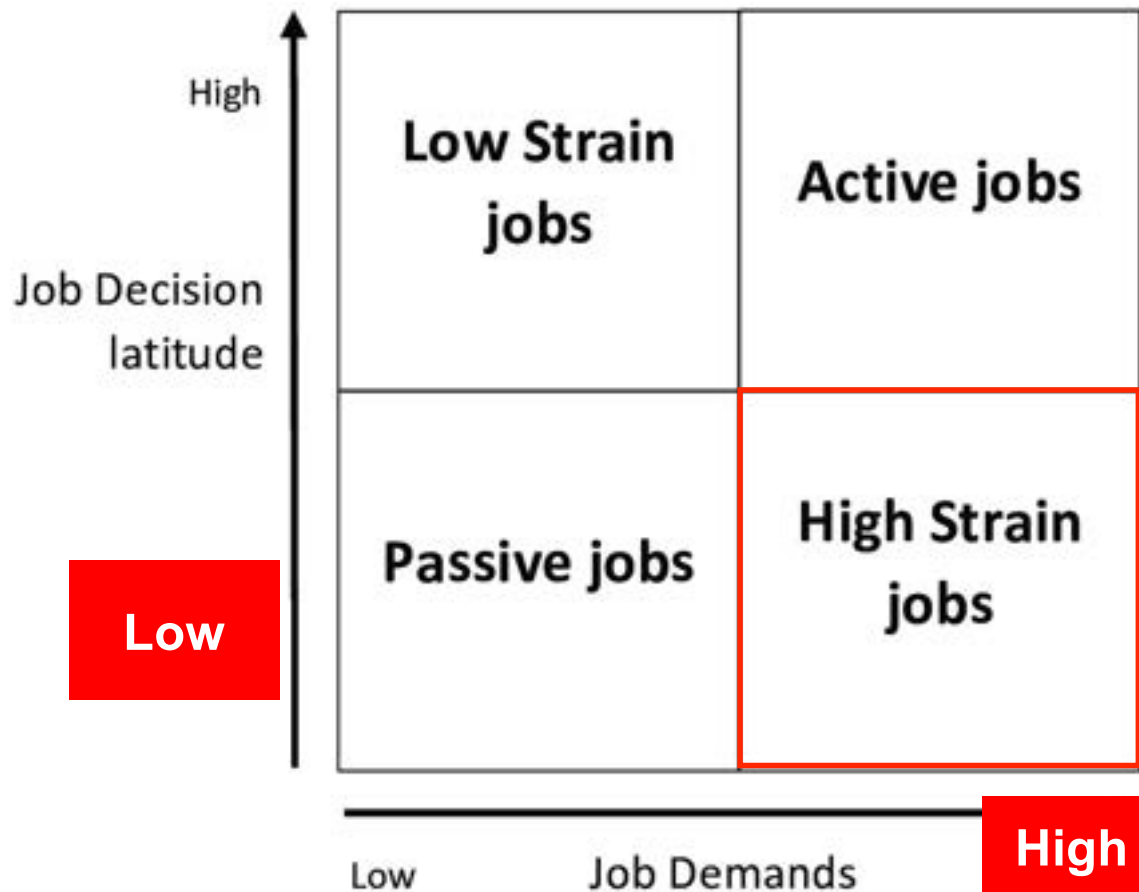
Definitions:

- “Psychosocial factors at work refer to interactions between and among work environment, job content, organisational conditions and workers' capacities, needs, culture, personal extra-job considerations that may, through perceptions and experience, influence health, work performance and job satisfaction.” (ILO, WHO, 2019)
- Elements that impact employees' psychological responses to work and work conditions, potentially causing psychological health problems.
- Potential Limitation: Tend to interchange the terms psychosocial and psychological

2 Models related to Psychosocial Factors

Evidence for both MSI and Psychological Injury

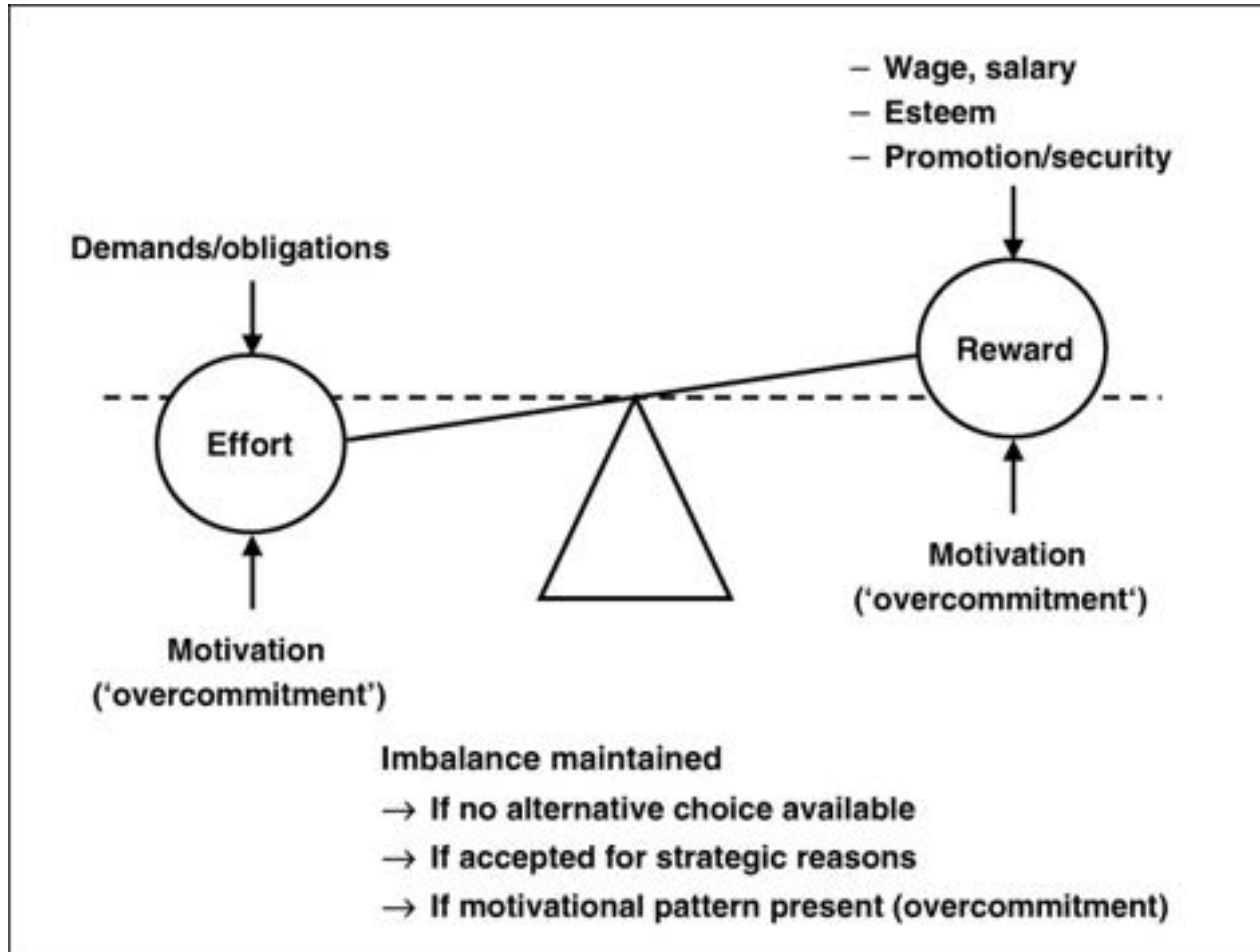
Job Demand Control Model (Karasek, 1979)



Job Demands Examples

- Monotonous work
- Time pressure
- High concentration
- High responsibilities
- High workload
- Few opportunities to take breaks
- Lack of clarity
- Low control and low autonomy

Effort Reward Imbalance (Siegrist, 1996)

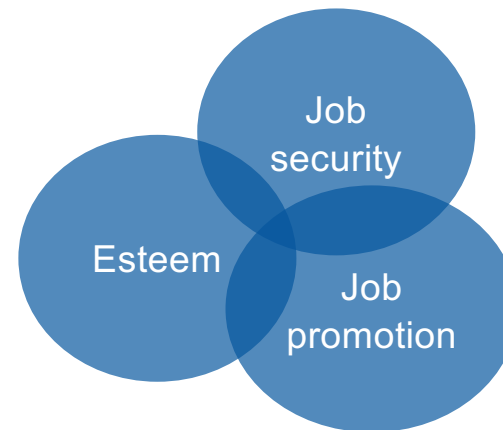


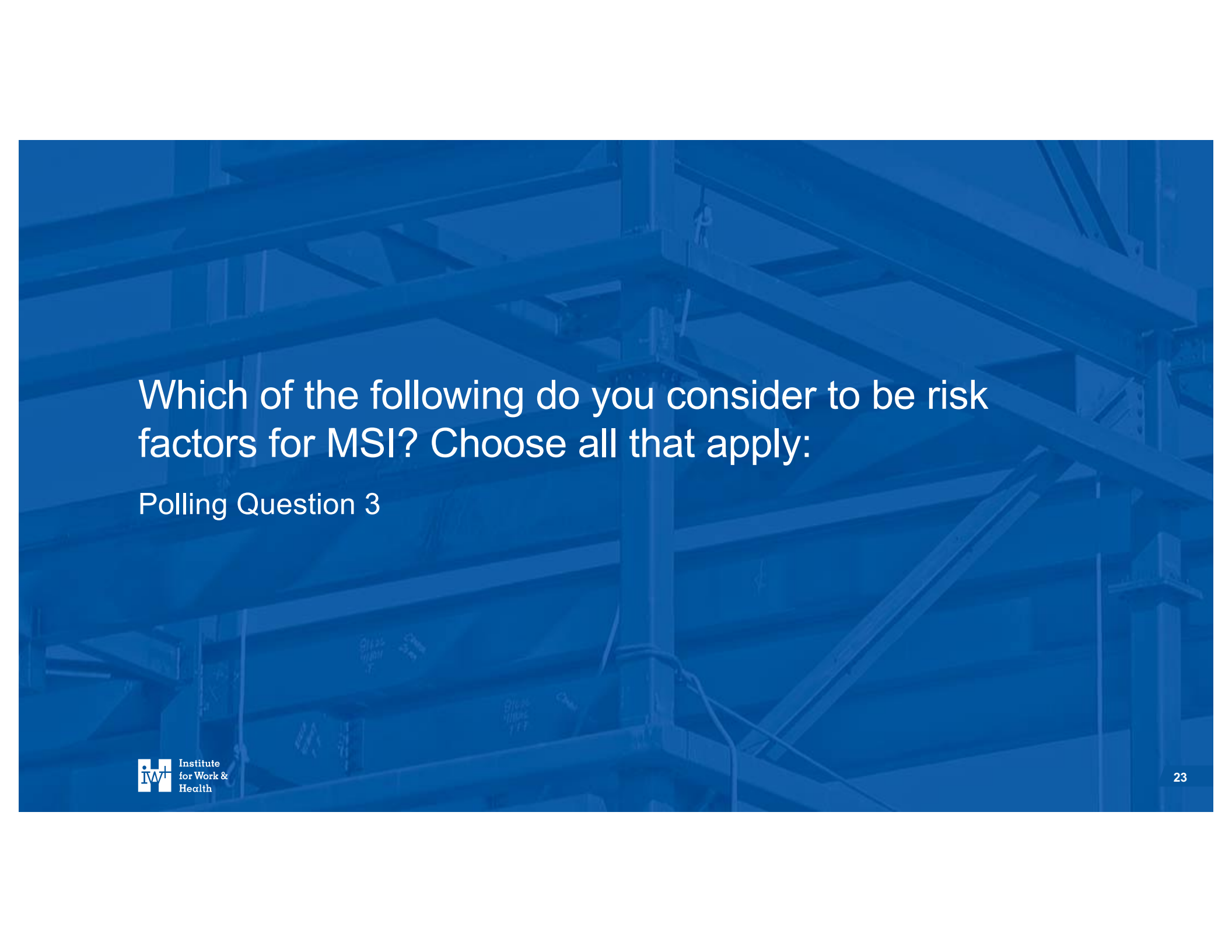
ERI Examples

- **Effort:**
 - Time pressure
 - Lots of responsibilities
 - Physical demands
 - Overtime

- **Reward:**
 - Respect from supervisor
 - Job promotion & prospects
 - Adequate salary/income
 - Support

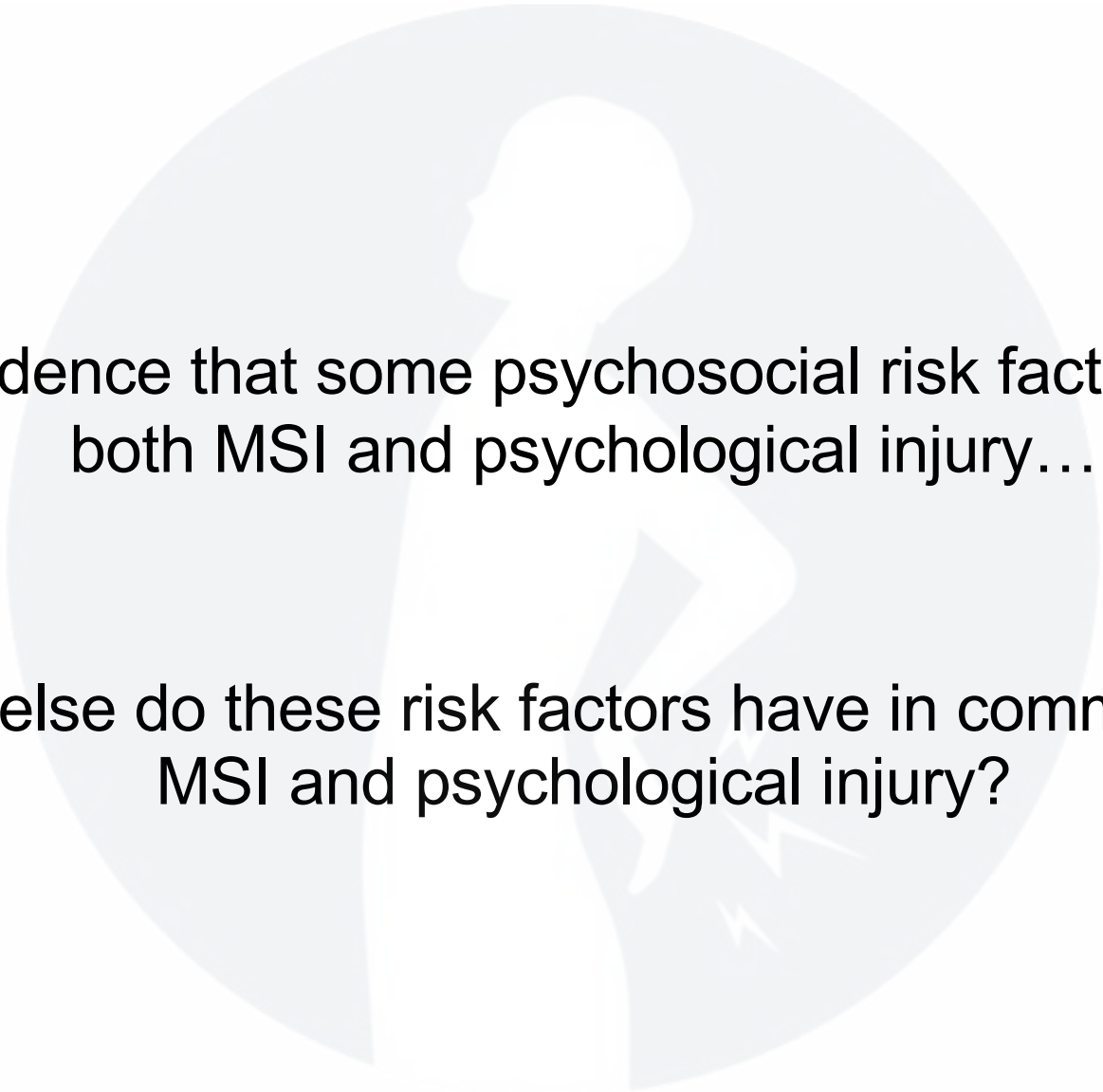
$$\text{ER Ratio} = \frac{\text{Effort}}{\text{Reward}}$$





Which of the following do you consider to be risk factors for MSI? Choose all that apply:

Polling Question 3



With evidence that some psychosocial risk factors impact both MSI and psychological injury...

What else do these risk factors have in common with MSI and psychological injury?

Risk Factors + Modifiers

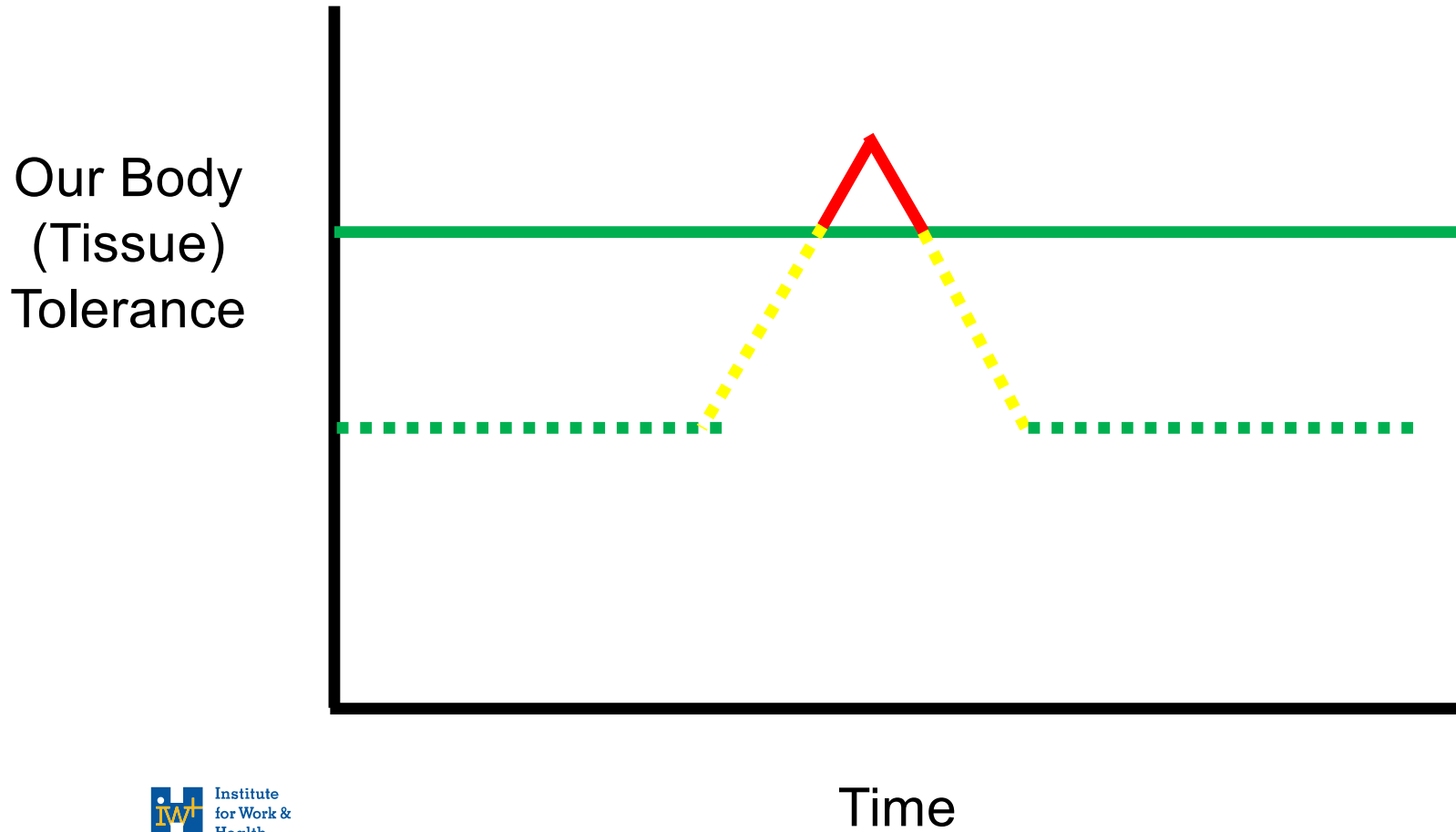
Examples of physical risk factors that have been well established for MSI:

- Force
- Posture
- Repetition
- Vibration

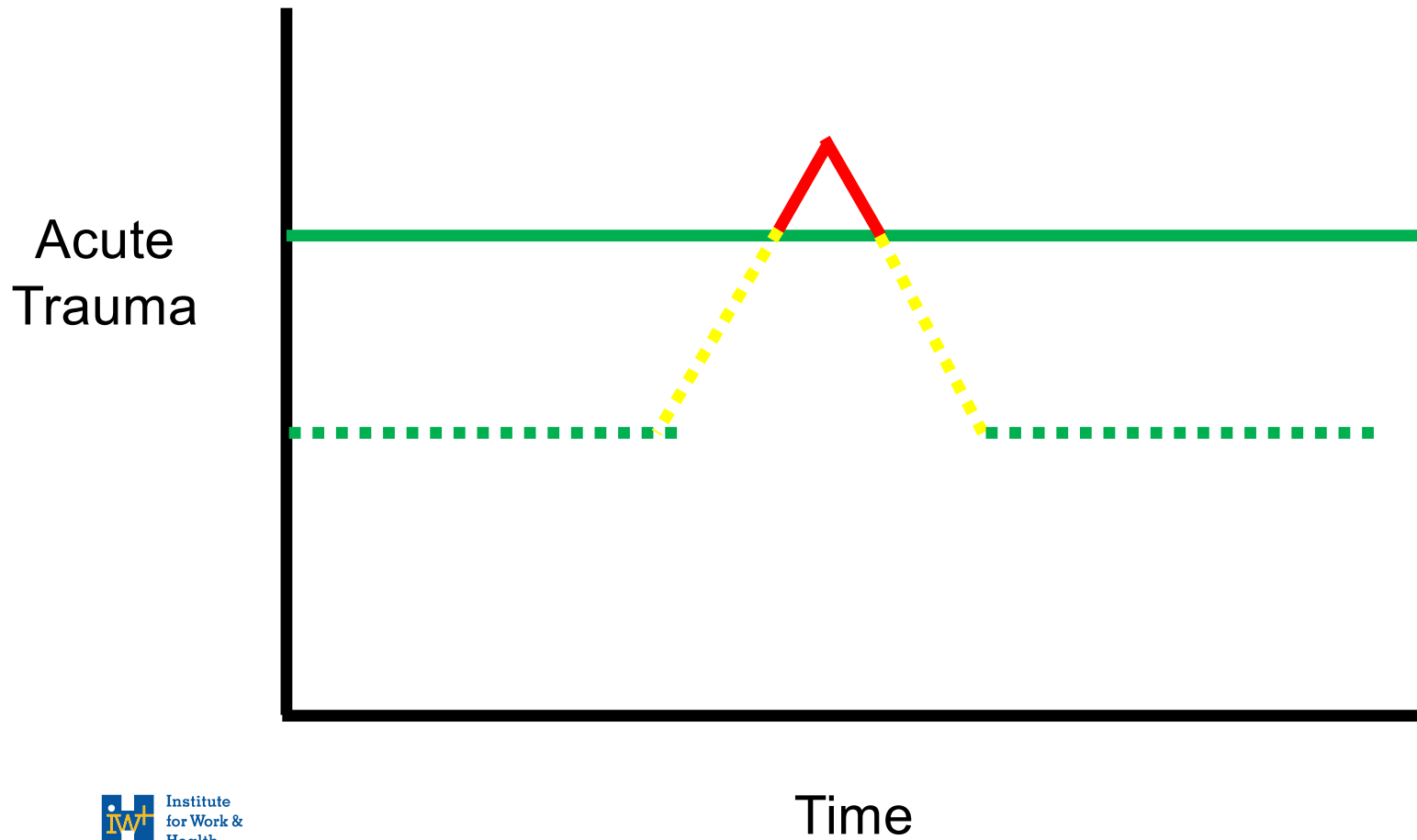
We also know common modifiers behind these:

- Trauma
- Frequency
- Duration

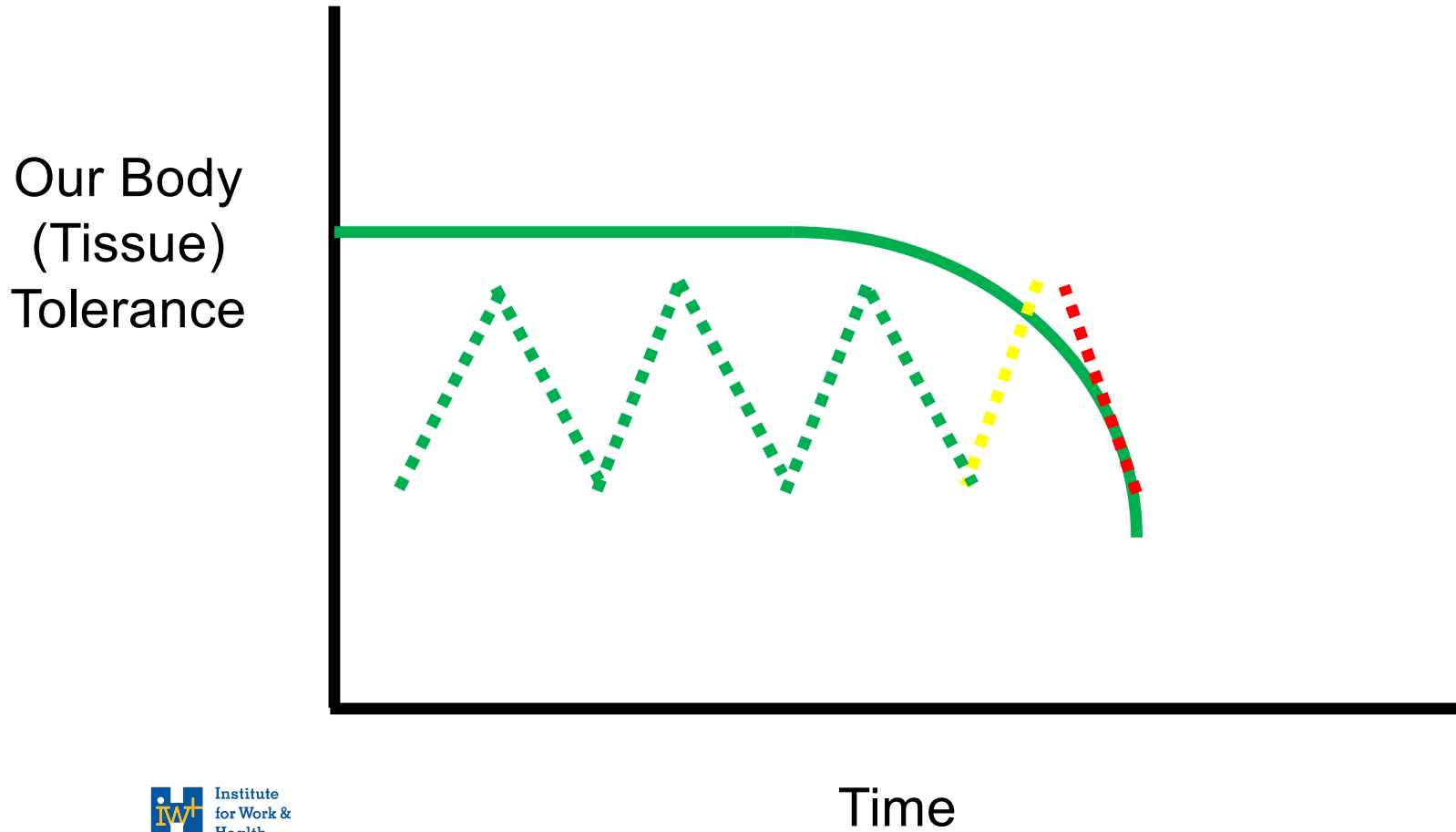
Risk Factors + Modifiers: Trauma



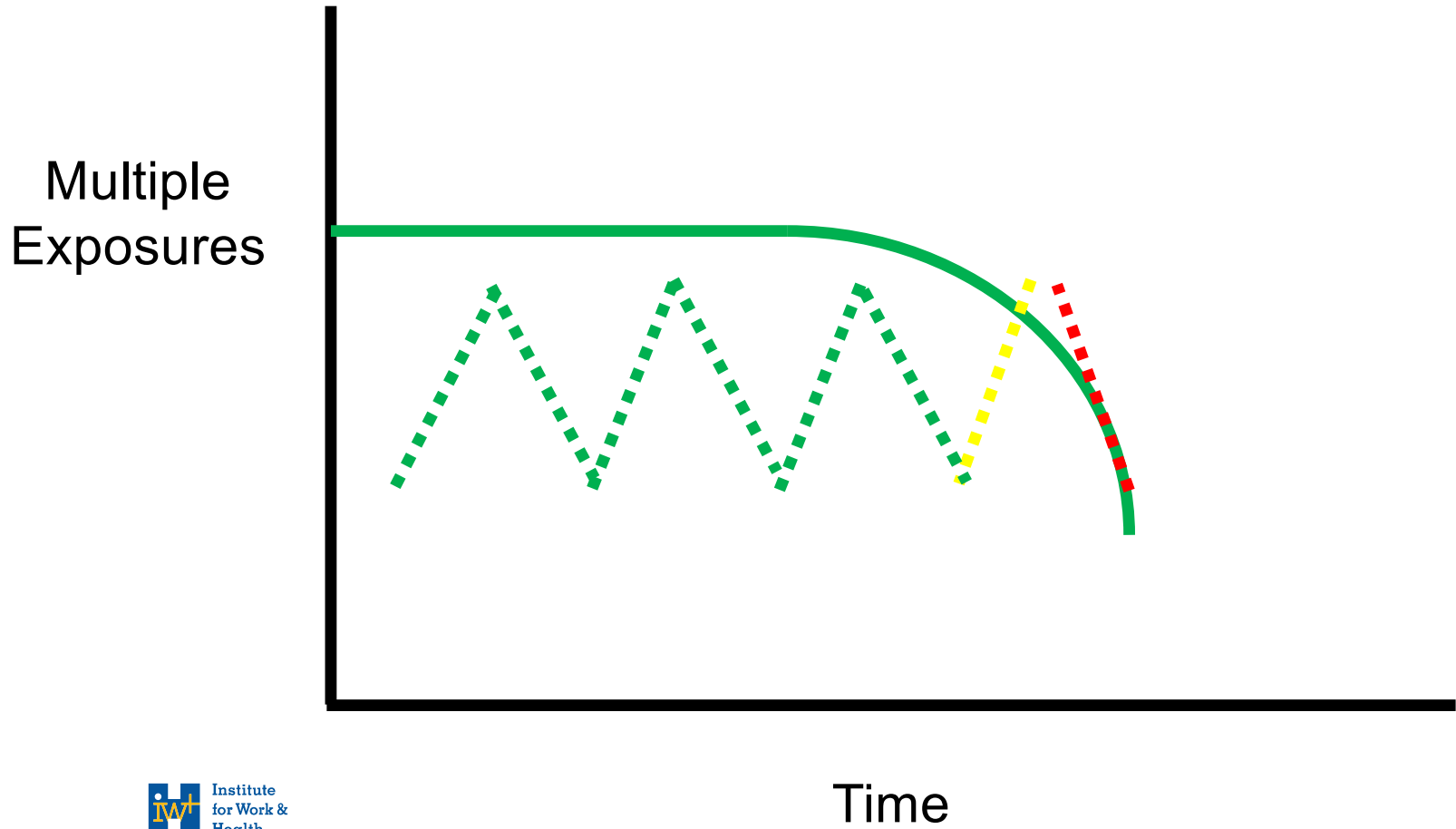
Risk Factors + Modifiers: Trauma



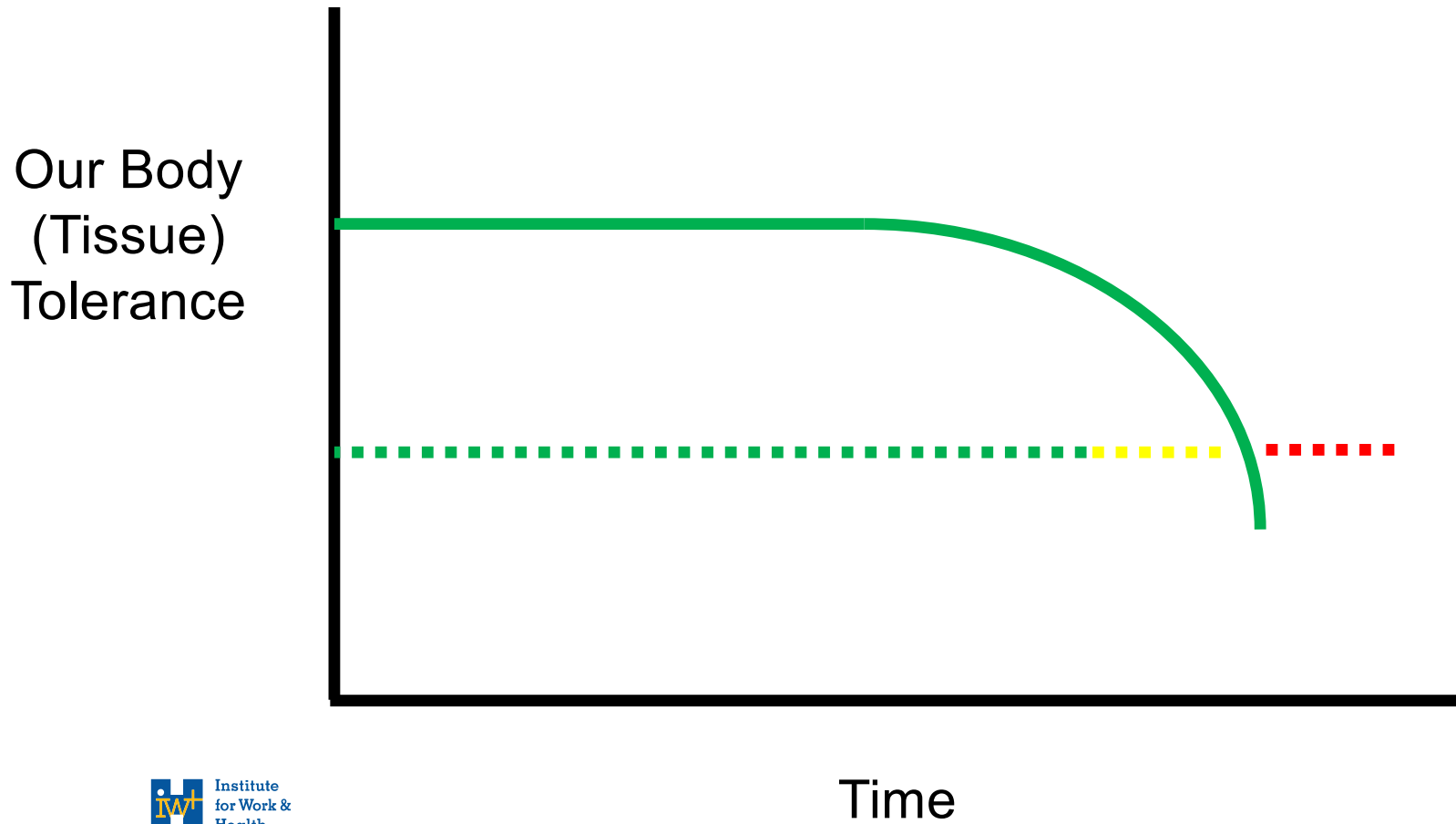
Risk Factors + Modifiers: Frequency



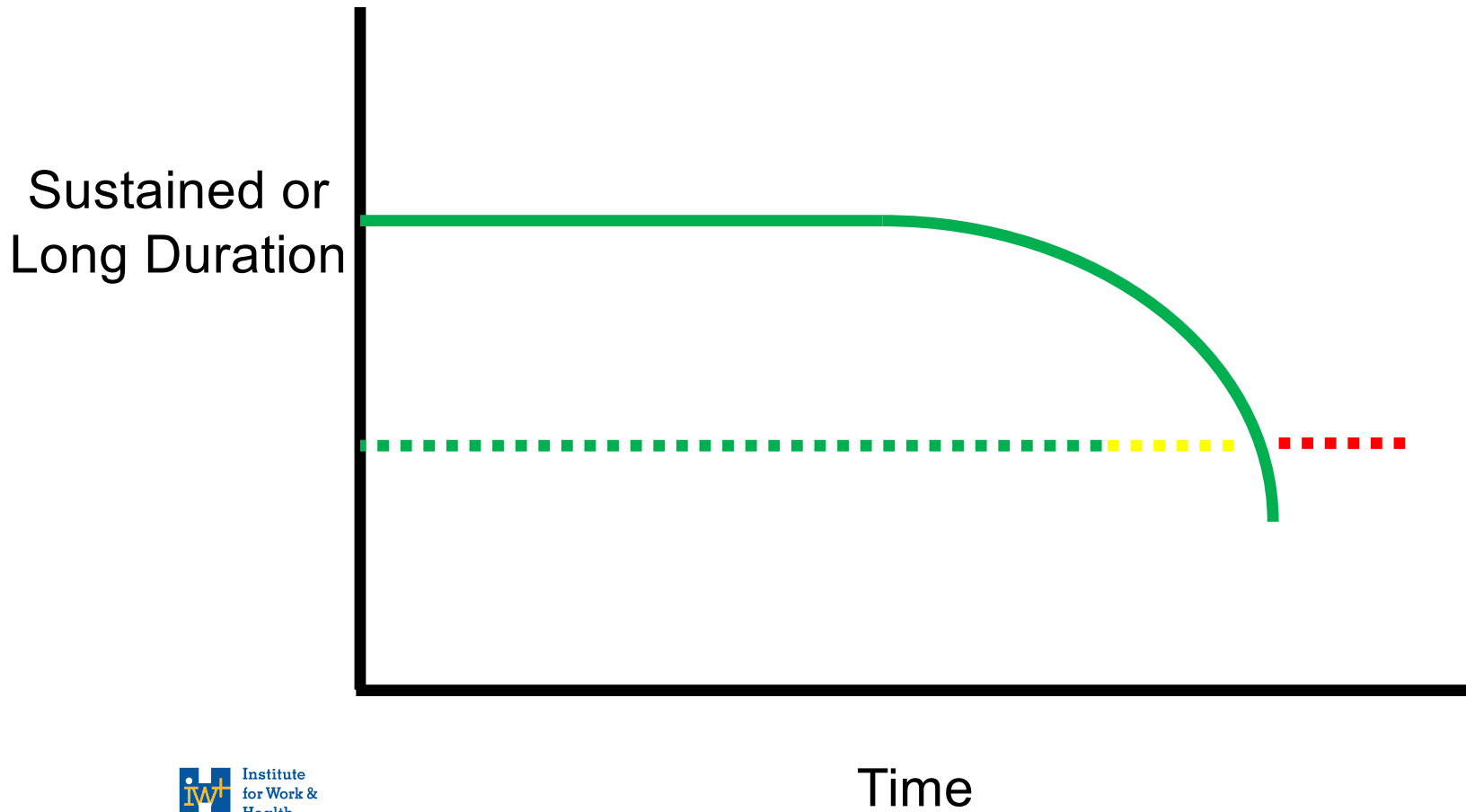
Risk Factors + Modifiers: Frequency



Risk Factors + Modifiers: Duration



Risk Factors + Modifiers: Duration



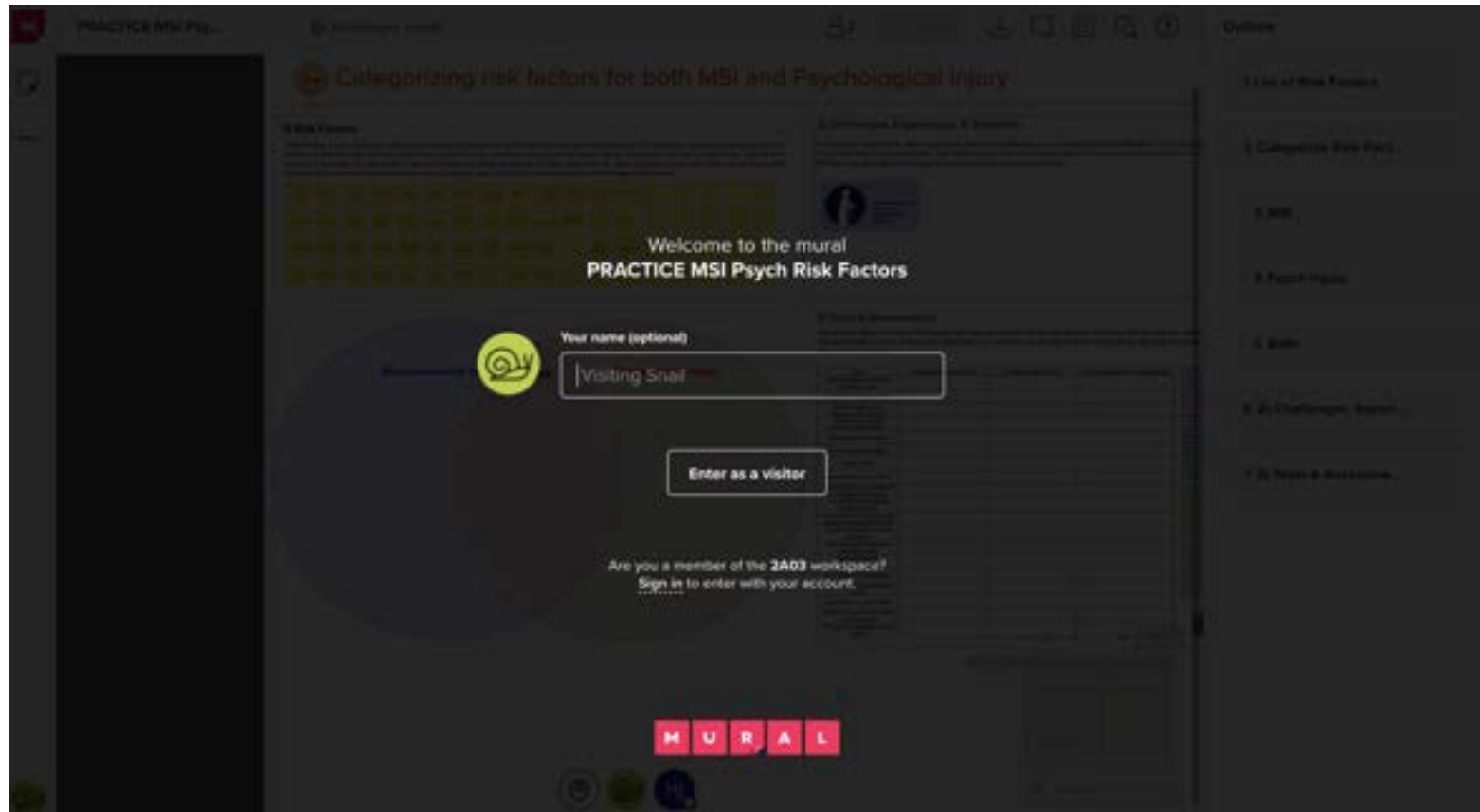
How do factors influence one another?



Breakout Sessions

- Categorizing Risk Factors
- Listing tools/techniques
- Discussing challenges

Interactive Session – MURAL Demo



Welcome back

Compilation of MURALS



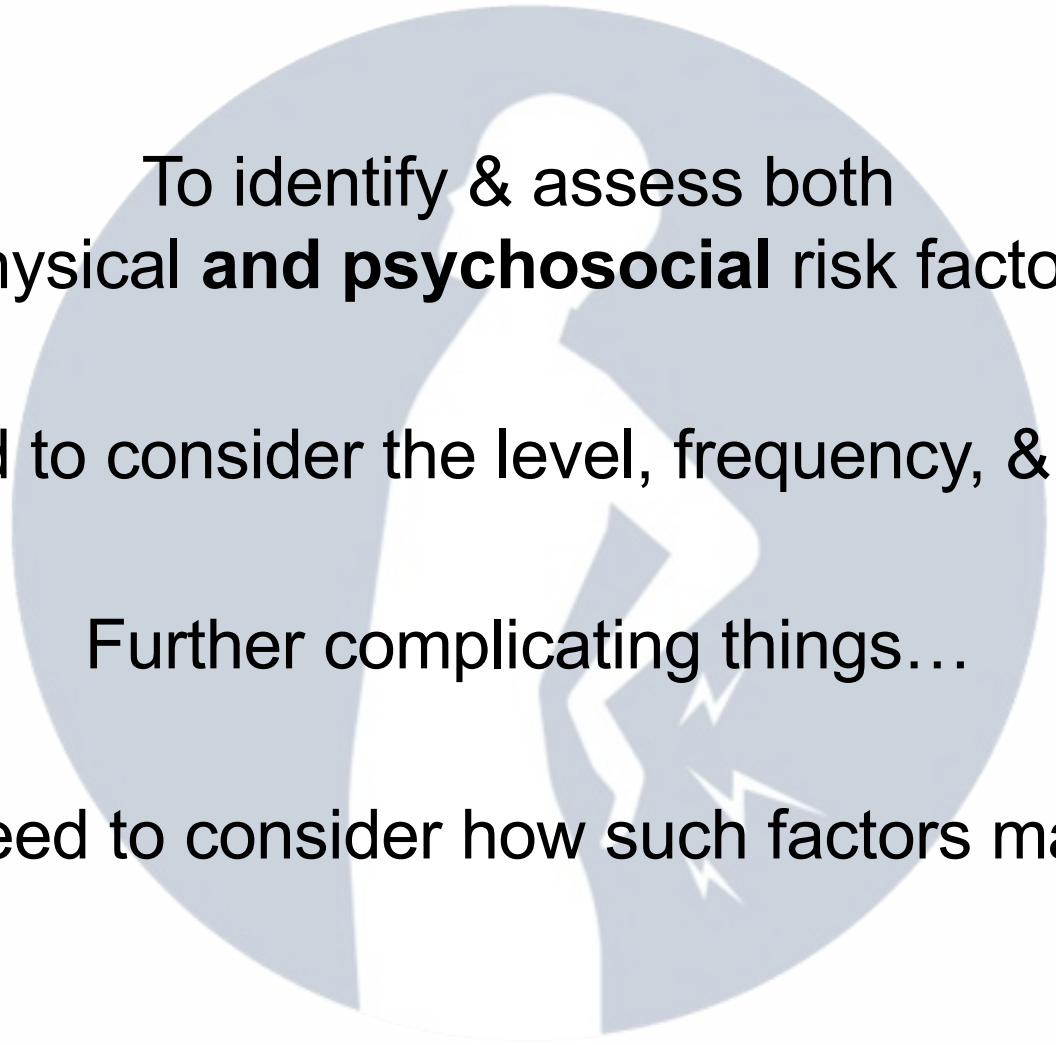
RSI Day Breakout 4



Tools

Tool	Never Heard of the tool	Familiar with the tool	Currently use/have used the tool
Psychophysical Material Handling Data	• • • • •		•
NIOSH Lifting Equation	• • • • •	• • •	
Rapid Upper Limb Assessment (RULA)	• • • • •	• • •	
Rapid Entire Body Assessment (REBA)	• • • • •	• • •	
Biomechanical Model	• • • • •		
Body Discomfort Map	• • • • •	• • •	•
Strain Index	• • • • •		
Hand Activity Level (HAL)	• • • • •		
Energy Expenditure Model for Material Handling	• • • • •		
Psychophysical Upper Extremity Data	• • • • •		
Copenhagen Psychosocial Questionnaire (COPSOQ)	• • • • •		
Guarding Minds at Work Survey	• • • • •	• • •	•
Effort Reward Imbalance Questionnaire	• • • • •		
General Nordic Questionnaire	• • • • •		
ILO Stress Checkpoints	• • • • •		
Job Content Questionnaire (JCQ)	• • • • • <small>This is a 100% 100% a 100%</small>	• • •	
Job Stress Survey (JSS)	• • • • •	• • •	
NIOSH Generic Job Stress Questionnaire	• • • • •	• • •	
Occupational Stress Index	• • • • •	• • •	





To identify & assess both
physical **and psychosocial** risk factors

We need to consider the level, frequency, & duration

Further complicating things...

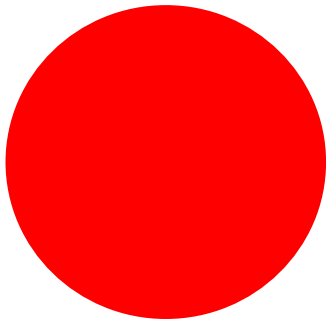
We also need to consider how such factors may interact.

How do factors influence one another?



Work Pace

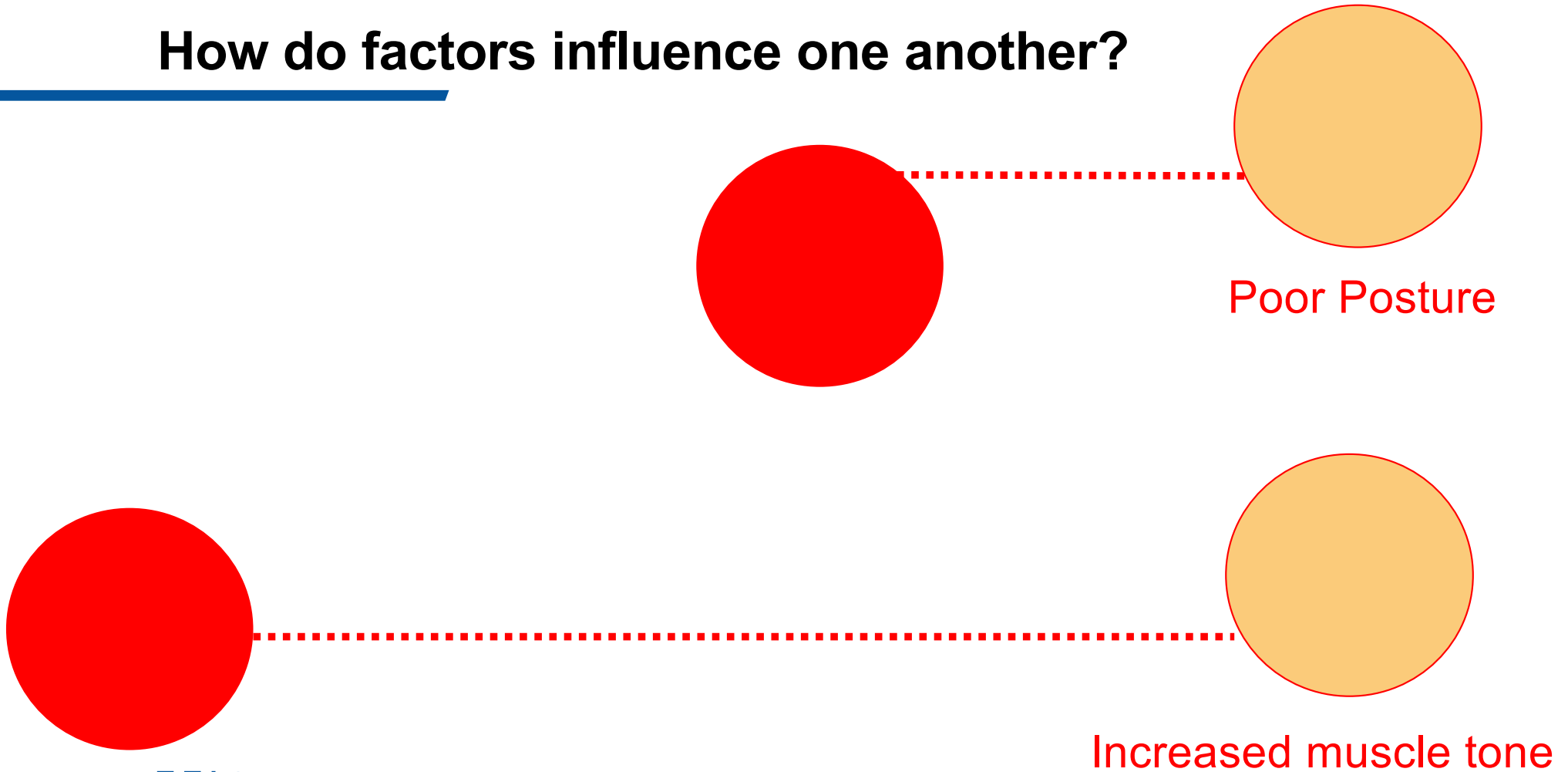
- Hurried tasks
- Speed/Accuracy tradeoff



Job Demands

- Thinking of other tasks
- Increased stress

How do factors influence one another?



How do factors influence one another?



How do we assess psychosocial risk factors?

- Examples of Survey & Self Report (workers/employees)
 - ERI Questionnaire
 - Job Content Questionnaire
 - Job Demands Survey
 - Nordic Questionnaire
 - ILO Stress Check
 - Job exposure Matrix



How do we assess psychosocial risk factors?

- **Copenhagen Psychosocial Questionnaire (COPSOQ)**
 - Designed for the assessment and improvement of psychosocial conditions in workplaces and for research purposes
 - Use at workplaces of any size and sector, which provides for comparisons and benchmarking by using reference values
 - <https://www.copsoq-network.org/>
- **Guarding Minds at Work**
 - Comprehensive resource to help you assess and address psychological health and safety in your workplace
 - Identify and measure employee experience with psychosocial factors known to have a powerful impact on organizational health, the health of individual employees, and the financial bottom line.
 - <https://www.guardingmindsatwork.ca/>

How do we assess psychosocial risk factors?

Adapt from the Psychological Health & Safety Standard:

1. Organizational Culture
2. Psychological and Social Support
3. Clear Leadership & Expectations
4. Civility & Respect
5. Psychological Demands
6. Growth & Development
7. Recognition & Reward
8. Involvement & Influence
9. Workload Management
10. Engagement
11. Job Balance
12. Psychological Protection
13. Protection of Physical Safety



Would you be interested in future presentation on Risk Factor Tools and Assessments?

Polling Question 4

Summary

- Where is the evidence?
 - Psychosocial risk factors are related to MSI
 - Psychosocial risk factors are related to Psych Injury
 - Examples of similar modifiers & interactions between MSI x Psych
- What can we do?
 - Measure & assess risk factors
- What are our challenges moving forward?
 - Likely greater attention to psychosocial factors in workplaces
 - Influence both MSI and psych injuries
 - Need to understand the similarity between MSI and Psych risk factors
 - Need to develop tools to assess psychosocial factors, modifiers, & interactions with physical factors

Future Research:

- Addressing MSI must also consider relevant psychosocial risk factors
- What are the common risk factors?
 - Scoping review of MSI literature
- How can we measure these common risk factors?
 - Develop an instrument to measure risk factors common to both MSI and psychological injuries.



<https://uwaterloo.ca/centre-of-research-expertise-for-the-prevention-of-musculoskeletal-disorders/projects/development-survey-explore-workplace-risk-factors-and>

Thank you

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