Database of Occupation-Specific Exposures (DOSE)

What is this research initiative about?

This research initiative focuses on understanding the factors contributing to challenges with job accessibility, workforce sustainability, and performance and productivity in Ontario's skilled trades. CISWP research has shown that factors related to injuries are common with factors leading to productivity and performance challenges. Workplace injuries are a significant cause of lost workdays and high claim costs, leading to permanent disabilities and early workforce departure. Workplace injuries and disabilities are also major challenges for equity deserving groups (e.g., women) to enter and prosper in these careers.

Why are we doing the study?

Faced with a significant shortage of skilled workers and record-high job vacancy rates, this initiative will support businesses in identifying root causes and developing potential solutions to prevent and reduce workplace injuries. Construction workers face a 50% higher risk of workplace injuries (particularly musculoskeletal disorders – MSD) compared to the general working population. MSD injuries cost businesses billions of dollars, upwards of $25.6B per year, due to worker absence, lost productivity, and other indirect costs.

What will we be doing at their work site?

Researchers from the CISWP will:

- Collect biophysical and performance data from worker participants over an entire week through surveys and wearable sensors (measuring muscle activity, movement, situational awareness, and heart rate).
- Use field instrumentation like video observation to monitor tasks from a distance, ensuring minimal interference with daily operations.
- Consult with supervisors and management on tasks performed during the day.

What can participants expect each collection day?

- Before the shift: Quick surveys and attachment of wearable sensors.
- During the shift: Job shadowing from a distance to observe tasks and record data.
- End of the shift: Follow-up quick surveys and removal of sensors.

Participation is voluntary, and all data will be confidential and anonymized. Video and photographs will be censored and used only to describe common tasks.

What can businesses expect?

- A report at the end of the study with exposure and demand information about studied jobs
- Understand best practices in improving productivity and performance.
- Series of recommendations based on collected data provided by certified safety professionals and professional ergonomists.
- Access to a growing database of job-specific, state-of-the-art, and evidence-informed resources aimed to manage workplace injury risks.
- Improve safety culture at construction sites and job accessibility for a diverse workforce.
- Demonstrate leadership in advancing skilled trades workforce through cutting-edge wearable technology.
- Access to an ecosystem of industry leaders, future skilled trades workforce, and applied researchers to tackle complex challenges.

How will we use the data?

Anonymized data will be stored securely within Conestoga College's CISWP data server. Data will be analyzed using novel processing and analyzing methods to study ergonomic, cognitive, and environmental exposures and demands at the action, sub-task, task, and duty levels for each job.

Get Involved

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