BARDAVON®
PREVENTION + RECOVERY

# Injury Prevention Case Study

Mining and Natural Resources Industry

# Body Stressing Injury Risk Assessment Using Wearable Technology and Data Analysis

The median recovery time for musculoskeletal body stressing injuries sustained by Mining and Natural Resources workers is 8.6 weeks, which is the highest when compared to all other industries and results in a significant impact on productivity and costs.

***In 2021, Bardavon conducted a 3-month program to assess how the wearable technology, smartphone app, and data analytics platform could assist in assessing and reducing avoidable body stressing injury risks for workers in the Mining and Natural Resources Industry.***

## Background

Decades of research have indicated that the most effective injury prevention methods are found in elite sports. These methods involve the measurement of an athlete's movements using wearable technology and analysis of the data collected to identify injury risk and guide action to reduce risk. This technology (validated by leading universities) is now available to companies through the Bardavon platform.

## Key Outcomes

**197** Reports recorded across 30 different workers and 3 locations

**50%** Potential risk reduction for high load tasks

## Trial Overview

The employer faced the following challenges in reducing the risk of body-stressing injuries:

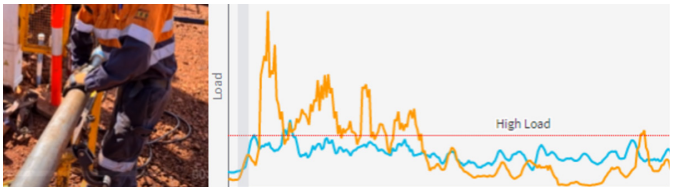
- Workers are required to perform physical work tasks which are unavoidable
- Previous injury risk assessments have not used data analysis to identify opportunities to reduce risks for specific tasks and individual workers
- Decreasing the physical capacity of an aging workforce
- High cost of injury prevention programs with variable outcomes and difficulty demonstrating ROI

***Trial Objectives***

Use wearable technology and data analysis to understand the physical demands on various workers, and identify opportunities to reduce injury risks.

***Method***

Measure the movements of a selected group over a three-month period using Work Task Assessments and Movement Coaching.




## Task Assessments

A safety professional places the sensors on a worker and records data and video through the smartphone app as the worker is performing the work tasks. This enables;

- The direct comparison between different methods of performing the task to identify the safest way
- An accurate assessment of a worker's ability for pre-employment screening or return to work following injury

## Movement Coach

The worker wears the sensors to measure their movements throughout a shift. The smartphone app provides alerts when the worker moves in a way that increases their injury risk. This enables;

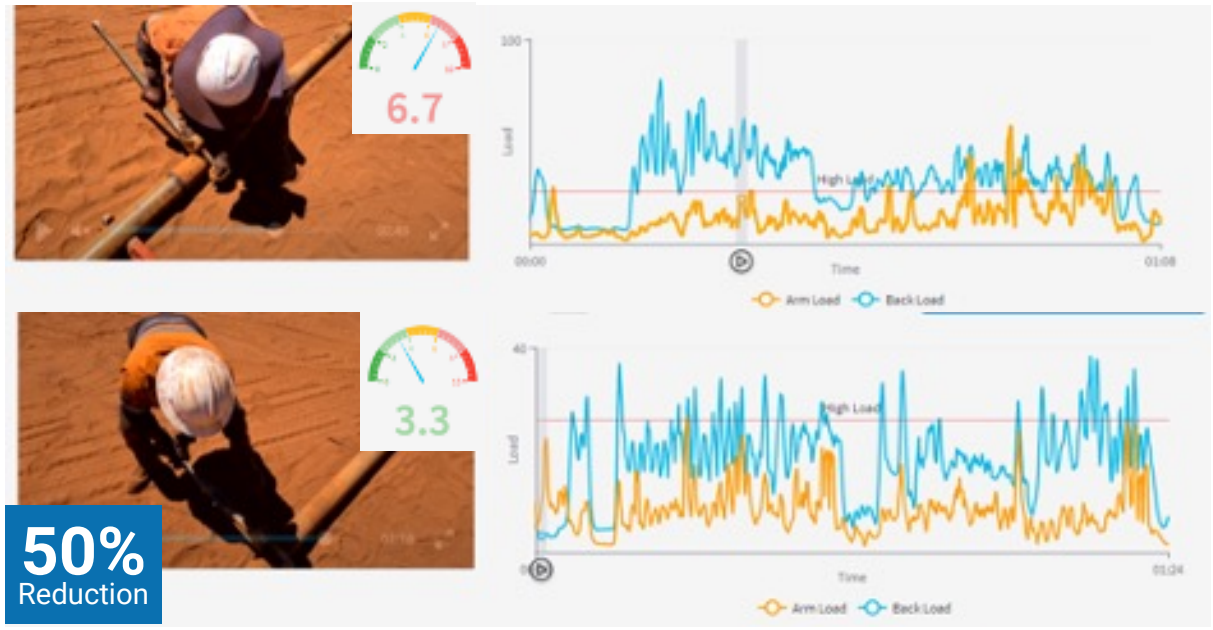
- Workers to modify the way they perform tasks to reduce risk
- Employers to understand which workers are moving safely, which have a high injury risk, and which may be fatiguing faster than others

## Safety Team and Worker Engagement

The most important components of a workplace injury prevention program are the safety team and worker engagement. The safety team onboarding process involved a 30-minute online training session, whilst the worker engagement process involved sports-themed posters around the worksite and a short instructional video.

## Task Injury Risk Reduction

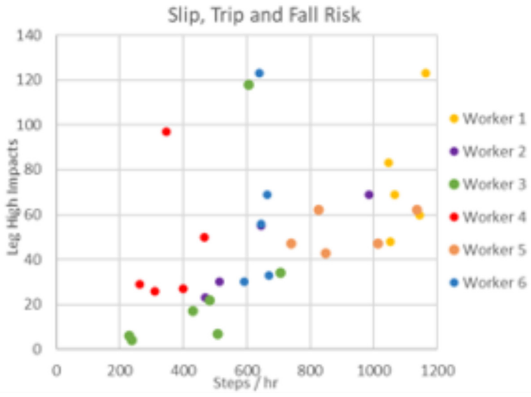
When the data and video are collected from workers performing the task, it enables an accurate assessment of the load on the body. This highlights any opportunity to reduce the injury risk through task modification or changes in operating procedures.




The above charts demonstrate the “Breaking Drill Rods” task requires the workers to use force to break the drill rod using a wrench. The technique used by the worker on the left recorded a load score of 6.7/10, whilst the worker on the right recorded 3.3/10. This demonstrates the correct technique can reduce the load on the worker performing this task by 50%.

## Worker Risk Reduction

The chart indicates that the six different workers in the same role, performing the same workload per shift, had different risks of lower limb and slip/trip/fall injuries. Worker 1 completed more steps during the shift compared to the other workers, indicating a higher risk of fatigue. Worker 3 completed the majority of their shifts with much fewer high impacts through their legs compared to the other workers.




This information was used to conduct further assessments on the workers to identify and eliminate the bad movement habits that were resulting in high impacts through the legs.

*"The wearable technology enabled us to better understand the physical demands of the tasks so we could take action to reduce injury risks."*

*–Regional HR Coordinator*

## Overall Results

| Key Outcome | Opportunity |
|---|---|
| The load on the worker's body is different when they perform tasks with different equipment and techniques. | Identify the equipment and techniques that reduce the load on the worker's body and take action to train the workers to reduce their injury risks. |
| Some of the physical demands of the work tasks are unavoidable. | Educate and coach the workers on the health benefits of physical work when it's performed in the safest way with low load. |
| Different tasks, locations and individual workers may have different load and slip / trip / fall risk. | Develop a risk profile across tasks, locations and individual workers and take action to reduce the load and slip / trip / fall risk. Use AI to automatically provide workers with high load individualised training content. |

**To learn more, contact the Bardavon team at businessdevelopment@bardavon.com**