



MHSC

Mine Health and Safety Council

Research findings: Reporting of over-exertion by women in mining

Jodi Pelders

**2026 Women in Mining Indaba
20 – 21 August 2026
Emperors Palace, Johannesburg**

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Acknowledgements



Presentation outline

- Introduction
- Aim and objectives
- Methods
- Project framework
- Results
- Conclusion
- Recommendations
- Way forward

Introduction

Increasing numbers of females entering the workforce

Differences in anthropometry and body composition between men and women

Design of equipment and tasks generally based on male physiques

Further challenges e.g. access to physical facilities, safety and security, culture and gender stereotypes, and impeded career progression

Women may have to work closer to the limit of their physical capacities

Over-exertion: demands exceeding capability (physical or mental limits)

The health, safety and performance of women may be compromised if their needs are not accommodated

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Aim and objectives

Aim

- To assess the impact of over-exertion on women's health and safety in the South African Mining Industry

Objectives

- To conduct a comprehensive literature review
- To develop an assessment tool
- To assess over-exertion of women at identified mines
- To determine the existence of and additions to reporting channels for women's occupational health and safety concerns
- To conduct and host one workshop

Methods

Study sample

- 9 mining companies
- Gold, platinum, coal, chrome, iron ore, manganese, and aggregates/ construction materials
- >500 women in mining

Data collection tools

- Assessment tool (electronic and hard copy)
- Question guide(s)

Procedures

- Data collection using electronic/ mobile devices and hard copy questionnaires
- Focus group discussions

Data analysis

- Statistical analysis (Contingency tables; Chi-square tests; Correlations; Stepwise logistic regression)
- Thematic analysis

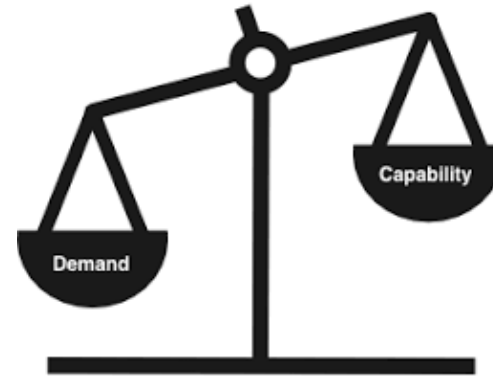
Ethics

- Approval granted by CSIR Research Ethics Committee

Project framework

Indicators of over-exertion (causes)

Demands	Capability
• Occupation • Workplace • Heat, dust, lighting, noise, humidity, chemicals, vibration • Confined spaces, load-handling, walking distances, cognitive demands, exertion • Shifts • Personal protective equipment (PPE) • Toilets, drinking water • Harassment • Etc.	• Age • Fitness • Commuting time • Household responsibilities • Sleep • Medical history • Pregnancy • Hormonal cycle • Smoke • Heat tolerance • Anthropometry (body measurements)

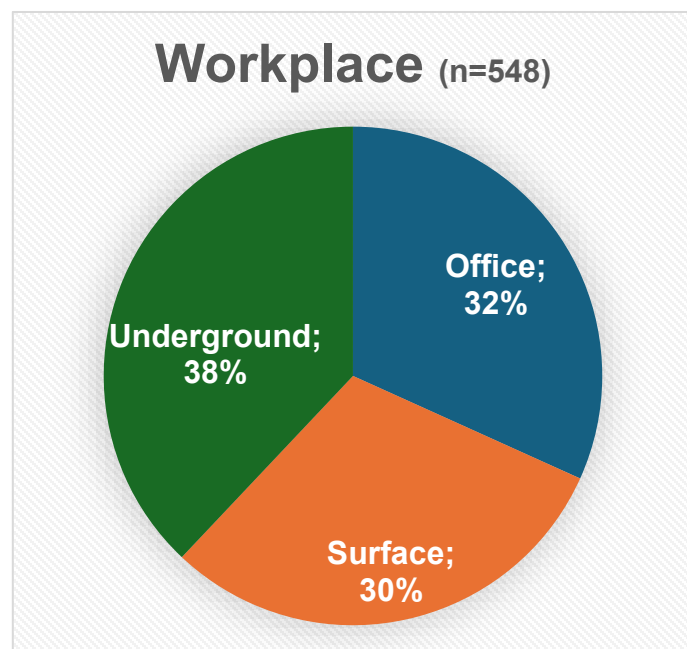


Impact of over-exertion (health, safety, wellness)

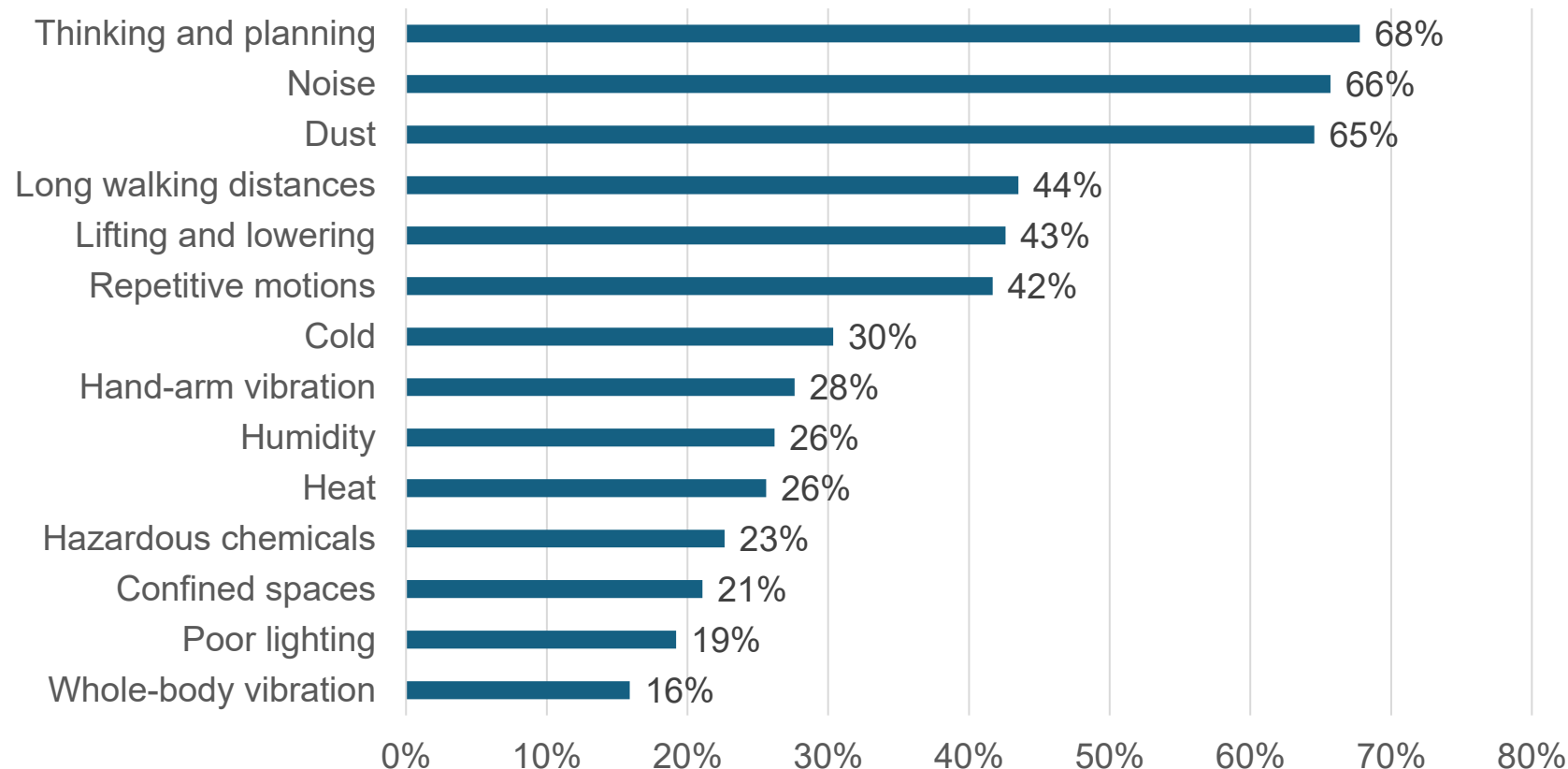
- Fatigue
- Musculoskeletal pain/discomfort
- Health
- Injury/accident
- Concentration
- Mood
- Sick leave

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Results – questionnaires

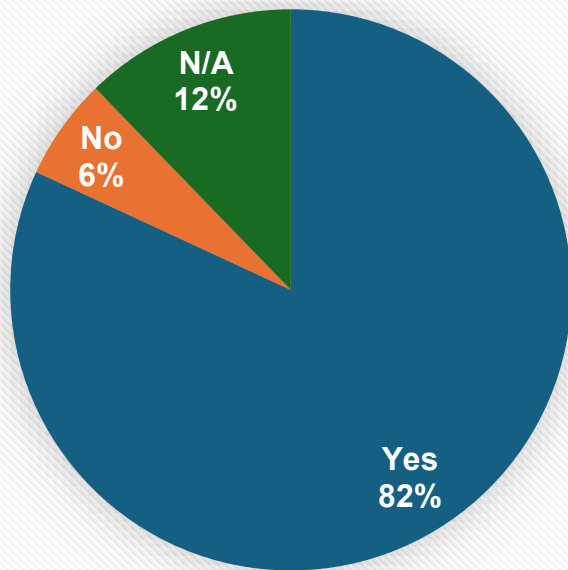


Environmental exposures and job demands (n=546-548)

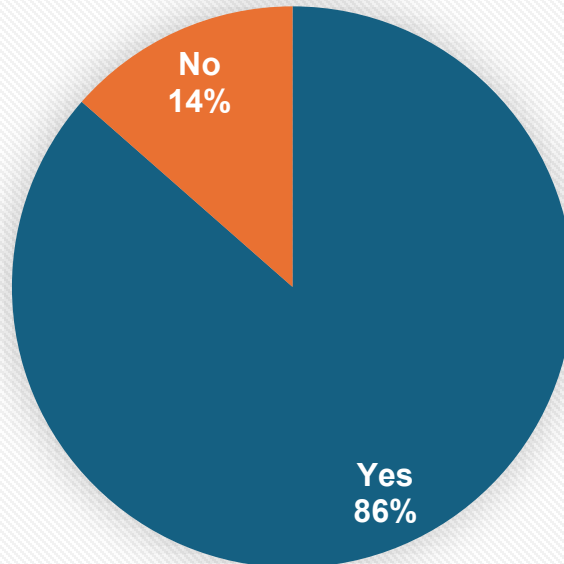


Results – questionnaires

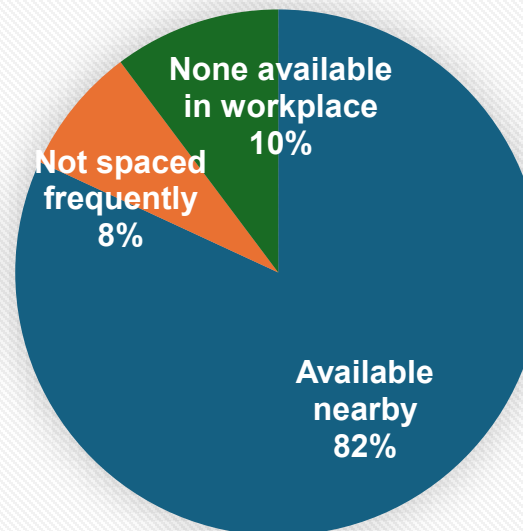
PPE fits properly
(n=547)



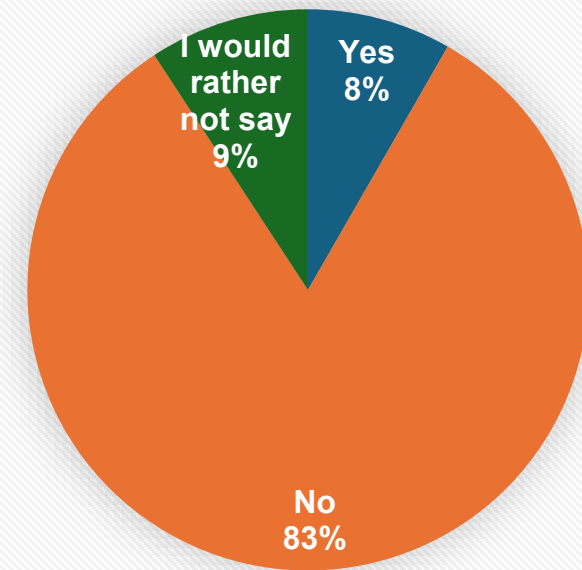
Adequate access to toilets
(n=547)



Availability of drinking stations
(n=547)

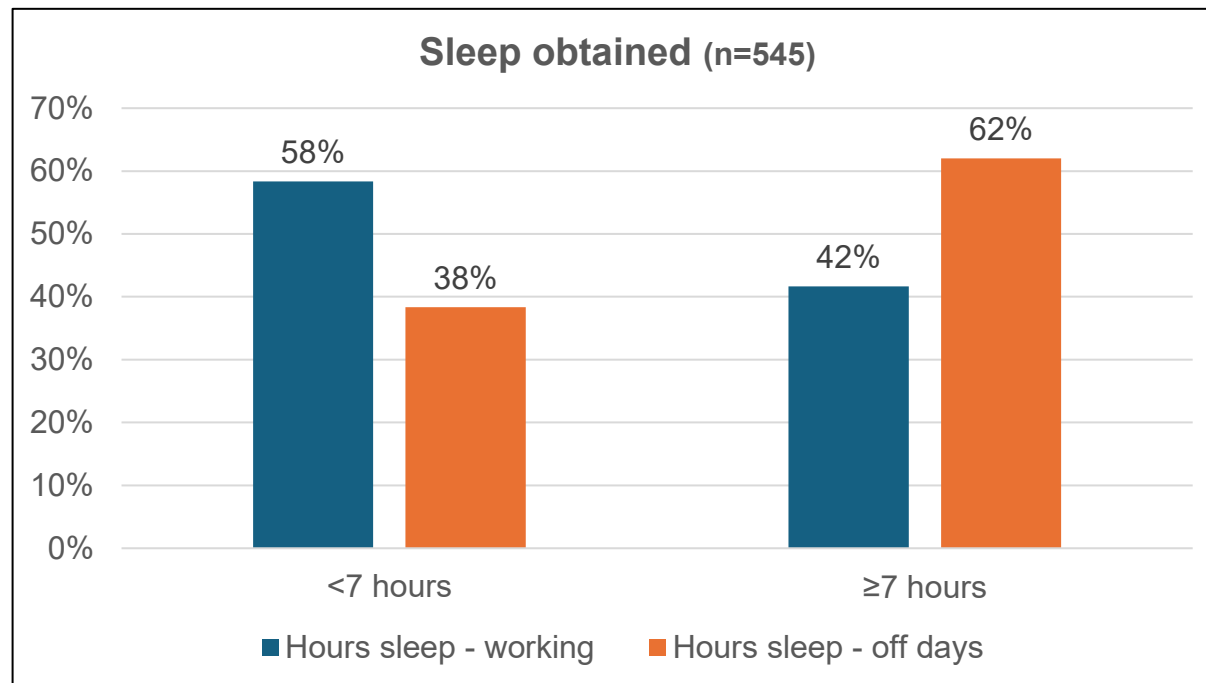
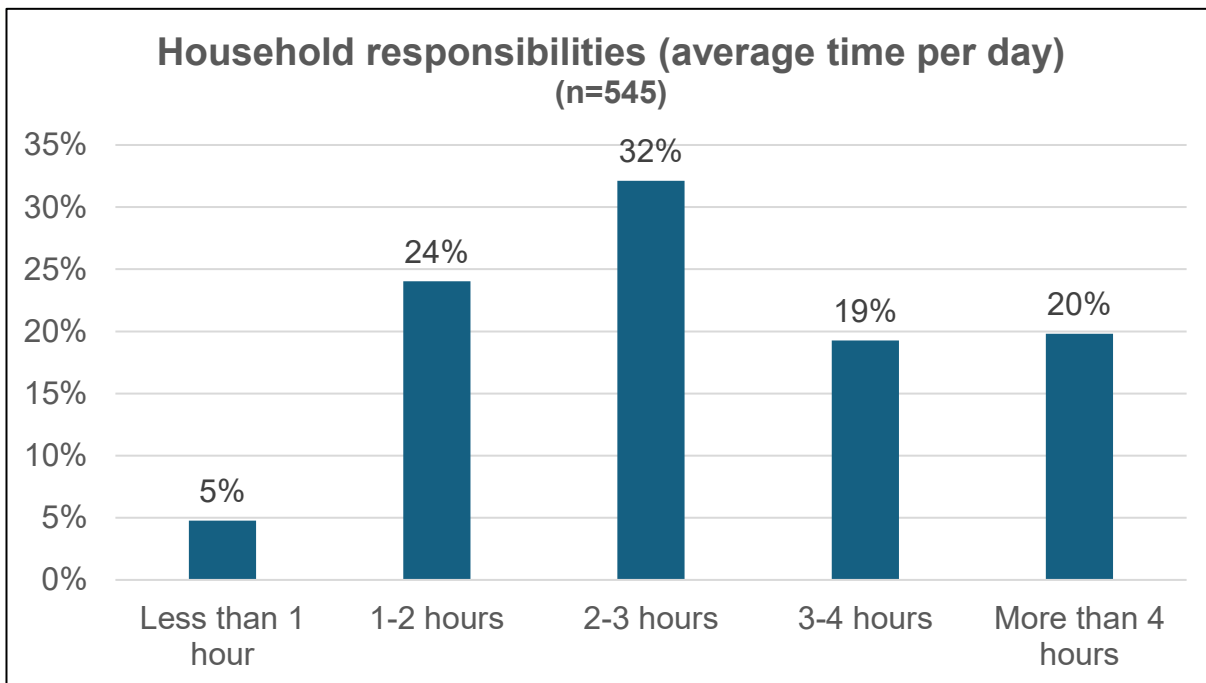


Harassment at work
(n=543)



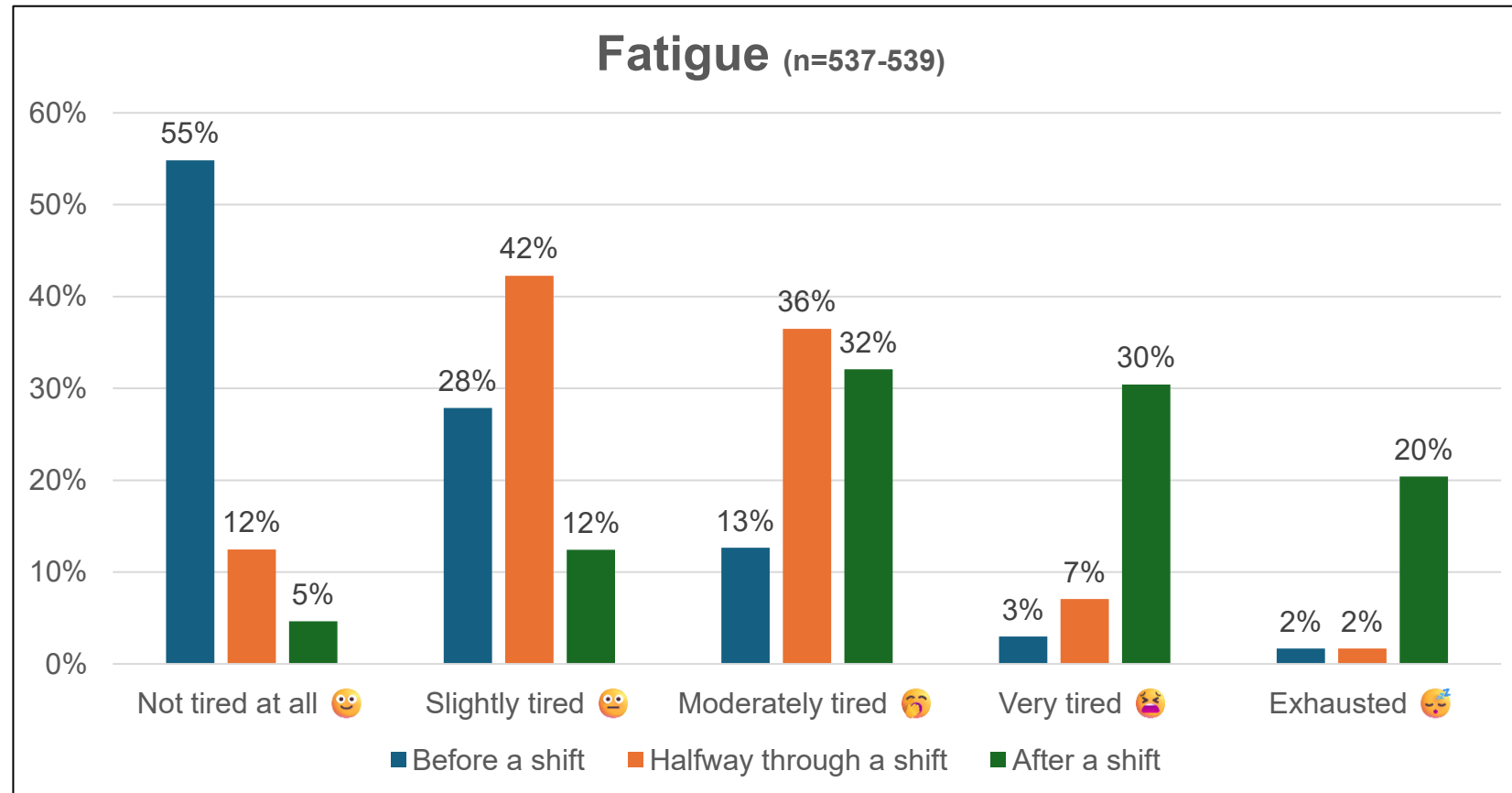
Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Results – questionnaires



Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

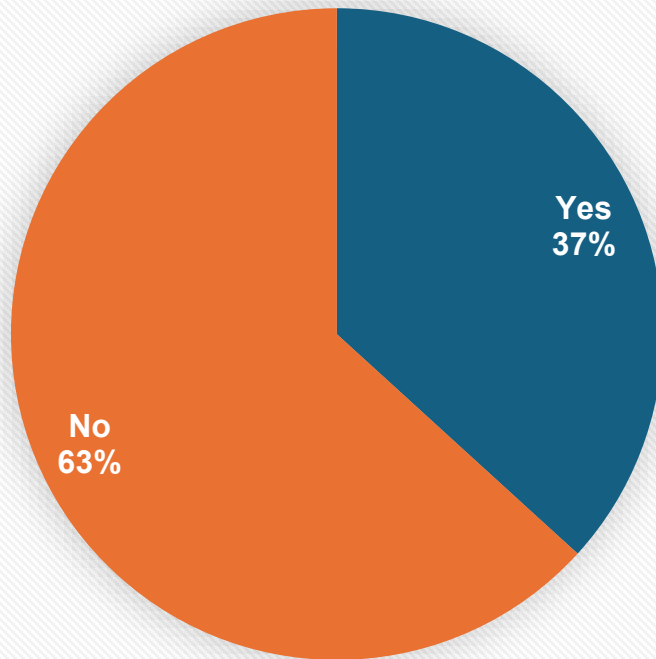
Results – questionnaires



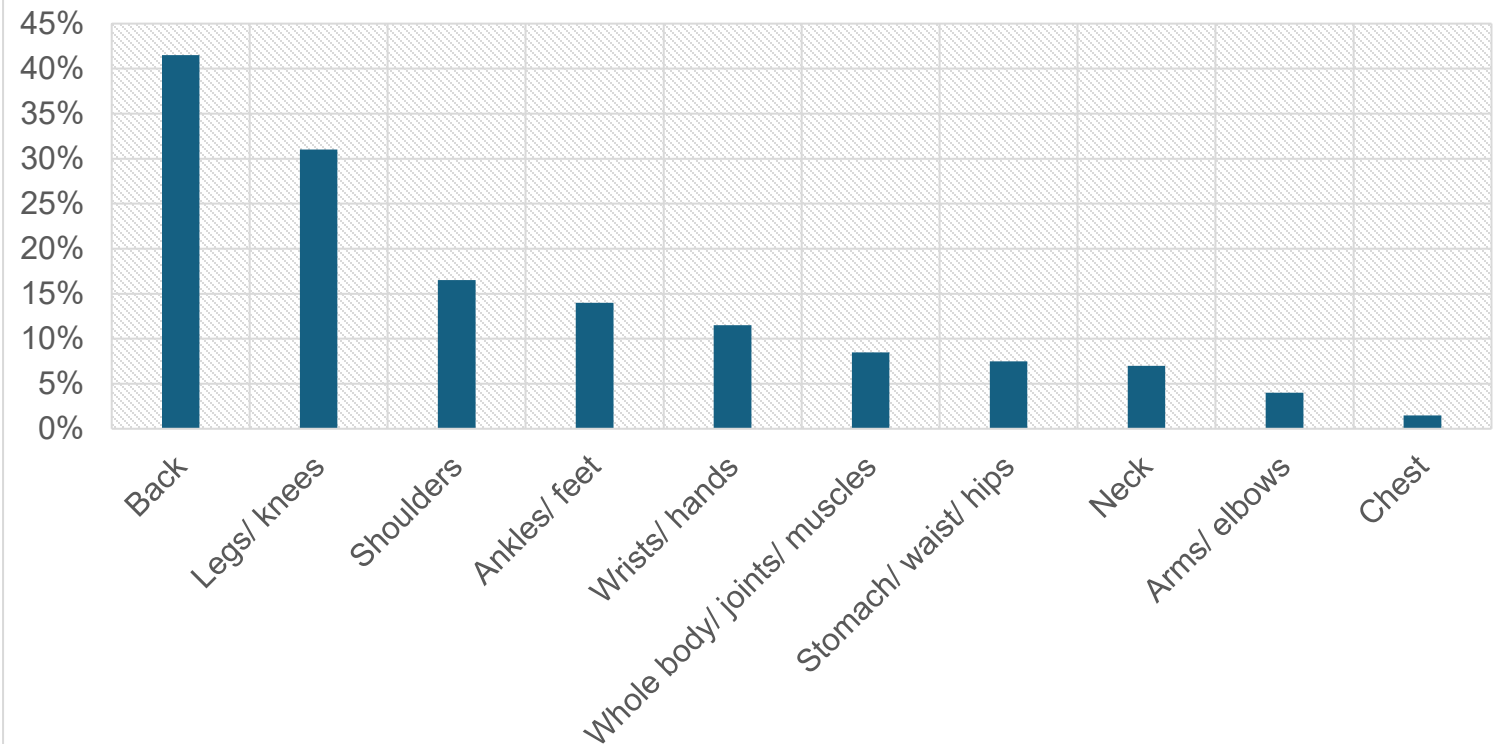
Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Results – questionnaires

Musculoskeletal pain or discomfort (n=544)



Area of body (n=200)



Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Results – focus group discussions (n=94)

Challenges

- Intimidation and harassment
- Discrimination
- Lack of development
- Design and quality of PPE
- Lack of access to adequate toilets, change houses, and emergency sanitary pads
- Travelling distances underground
- Lifting heavy loads
- Heat, confined spaces
- Shift work, overtime
- Equipment design
- Lack of resources
- Work-life balance
- Fatigue, injuries, mental and physical strain

Opportunities

- Increased respect, inclusivity and support for women in mining
- More growth and development of women
- Workshops, training and awareness campaigns
- Culture transformation programmes
- Ergonomics assessments and adjustments
- Supporting equipment
- Improved availability of hygienic toilets and change houses
- Access to emergency sanitary pads
- PPE designed for women
- Better quality PPE
- More frequent provision of PPE
- Darker colour overalls
- Exercise, diet, and wellness programmes

Reporting channel analysis

Available reporting channels

- Health and safety representatives
- Safety officers
- Health and safety committee
- Managers
- Supervisors
- Foremen
- Complaint books
- Clinics/medical centres
- Unions
- HR
- WIM Committee (and sub-committees)
- Anonymous hotlines (including call centres, email, and WhatsApp platforms)
- Surveys

Challenges relating to reporting channels

- Fear of victimisation, intimidation or punishment
- Concerns about confidentiality
- Lack of trust in anonymity
- Fear of job loss
- Inaction
- Time taken to resolve issues
- Poor communication
- Lack of feedback
- Vulnerability in reporting
- Lack of active leadership

Recommendations

- Implementation of a suggestion box
- WhatsApp reporting
- Other channel for anonymous reporting
- Encourage reporting and suggestions from the workforce
- Support of WIM platforms
- Mentorship for WIM
- Roles for receiving and actioning complaints
- Culture transformation
- Ergonomic risk assessments
- Increased awareness

Reporting channel analysis

Workshop recommendations

Education and awareness

- *“Awareness campaigns”*
- *“More training about reporting structures”*

Workplace culture and communication

- *“Like GBVF, I believe women struggle with fear of consequences of reporting matters like overexertion”*
- *“Management must intentionally champion for safe spaces”*
- *“Provide feedback to people that raise concerns”*

Surveillance and reporting

- *“Suggestion boxes”*
- *“Independent reporting channels”*

Anonymity and confidentiality

- *“Anonymous reporting opportunities”*
- *“Women must be given the assurance that their complaints will be treated with a high level of confidentiality”*

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Conclusion

Causes of over-exertion

- **Job demands and physical environment** e.g. high workloads, lifting heavy loads, long travelling distances, shift work, ergonomics etc.
- **Amenities and PPE** e.g. toilets, change houses, drinking water, design and quality of PPE etc.
- **Psychosocial factors** e.g. lack of development, bullying and harassment, lack of respect, workplace culture etc.
- **Personal/work-life balance** e.g. dual burden of responsibilities, differences between men and women, obesity, age etc.



Consequences of over-exertion

- Fatigue
- Mental and physical strain
- Incidents and accidents
- Injury
- Occupational disease
- Stress, anxiety and depression
- Lack of motivation
- Relationship issues
- Reproductive problems
- Harassment

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.

Recommendations

Quick wins

- Improvements to toilets, change houses, and availability of emergency sanitary pads
- Improved PPE design, quality and availability

Policy/regulations

- Updates to Codes of Practice relating to fitness to perform work and medical surveillance
- Occupational Risk Exposure Profiles (OREPs) – informed placement of workers

Collaboration

- Participatory ergonomics assessments and interventions
- Linkages of health, hygiene and HR
- Participation of women in decision-making

Training and awareness

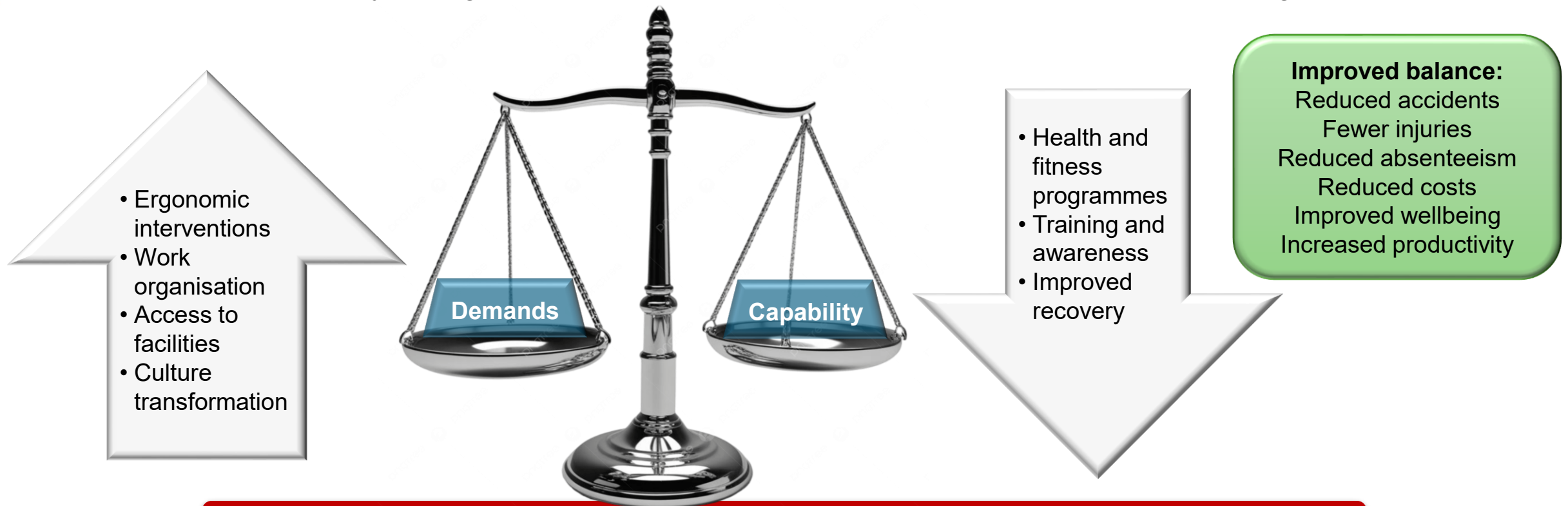
- Culture transformation programmes
- Training and awareness of over-exertion and its impacts e.g. for mine workers, OMPs and safety professionals
- Improved development

Future research

- Updates and streamlining of the assessment tool developed in the project
- Anonymous and accessible reporting systems, including periodic surveys

Way forward

What key changes are needed to address over-exertion of women in mining?



Interventions will make a safer, healthier, more productive industry for all

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.



**Every mine worker returning from work unharmed every day.
Striving for zero harm in our lifetime.**



MHSC

Mine Health and Safety Council

Dr Jodi Pelders



is a Senior Researcher at the Council for Scientific and Industrial Research (CSIR) Mining Cluster.

She obtained her Master's degree in Ergonomics from Rhodes University, and completed a PhD in Public Health at the University of the Witwatersrand.

Jodi has conducted research relating to human factors, health, and safety in the Southern African mining sector for approximately 15 years.

Her research interests include physiological strain, fatigue management, incident analysis, socioeconomic conditions, and women in mining. She hopes to contribute to improving health, safety, and productivity of individuals, and increasing sustainability in and around mines.

Every mine worker returning from work unharmed every day. Striving for zero harm in our lifetime.