



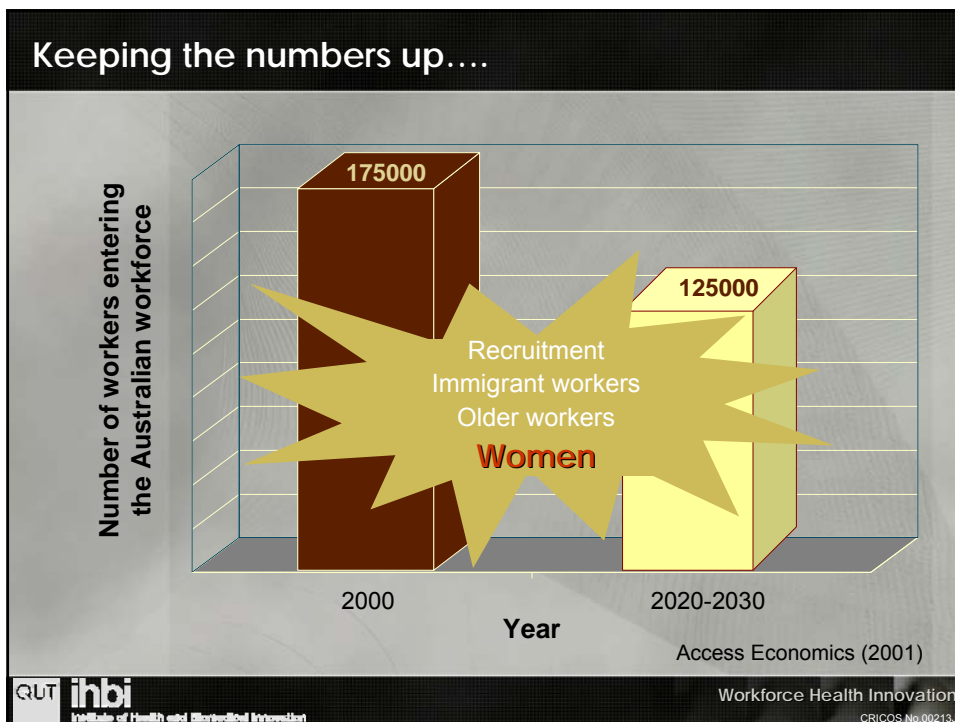
Issues and opportunities associated with the recruitment of women to the mining workforce

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Workforce Health Innovation
CRICOS No.00213J



Mining targets...

For Example:

The Queensland Resources Council (QRC) aims:

- Currently, women make up only 6% of those in non-traditional roles in QRC;
- By 2020, QRC wants to double this to 12%.

= a new pool of skilled workers

Queensland Resources Council (2007)

Are there any special considerations in respect to women?

	Preventing harassment & discrimination	Equal pay & entitlements	Personal protective equipment & clothing	Flexible working arrangements	Manual handling legislations (eg. Lifting weights)	Workplace toxins substances regulations
Men						
Women	Cement Australia MacMahon Holdings Ltd. Xstrata Copper etc.	Comalco Rio Tinto Coal Thiess Ltd. Golding Contractors etc.	Thiess Ltd. Consolidated Rutile Ltd. QLD Energy Resources etc.	Xstrata Copper Rio Tinto Coal Roche Mining Clayton Utz etc.		

The Queensland Resources Council (2007);
Messing, Lippel et al (2000)

Presentation Outline



Brief review of gender differences

Musculoskeletal injury risk factors

Possible solutions for preventing women from exposure to these risk factors

The Key Gender Variations (compared to men)

Physiological

- ↓ muscular strength
- smaller & lighter body structure
- ↓ aerobic energy/capacity
- different heat dissipation system
 - ↓ sweat evaporation
- reproductive system & sex hormones
 - ↑ hormonal fluctuations

Psychological

- react more strongly to psychological stressors

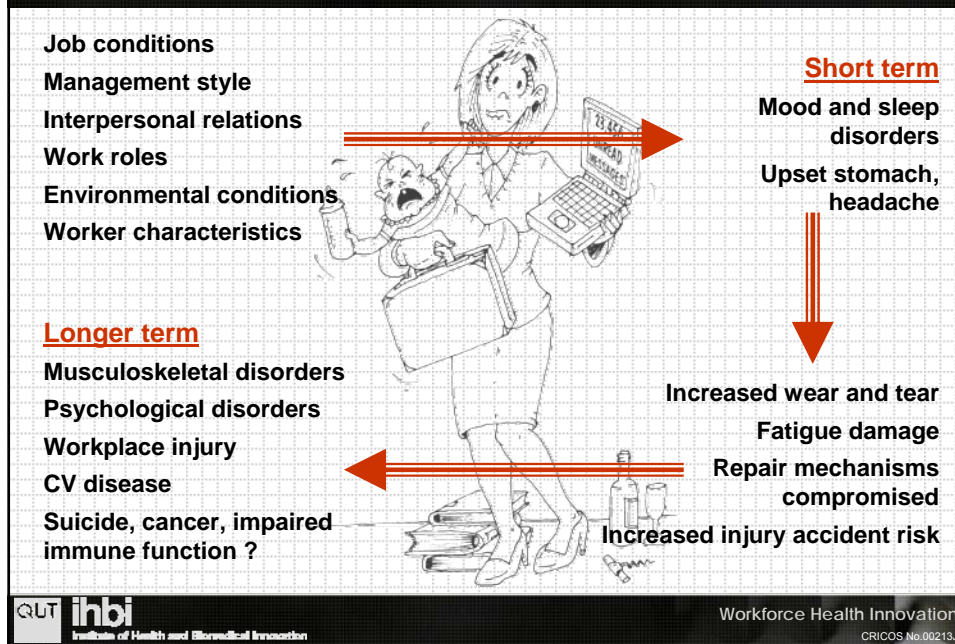
Physical environment
Life style
Job conditions
Family/home issues

Induce muscle activity/tension

Age-related changes in men & women start at different times through out the ageing process

Ilmarinen (1999)

Stress-related conditions



Evidence from other physically demanding industries

A need for:

- Design tasks for longer recovery
- Reduce repetitive and monotonous tasks
(Pocekay et al, 1995)
- Provide more job rotation
(Kaergaard & Anderson, 2000)
- Design work with more autonomy and opportunities for job modifications
Lundberg (2002)
- Re-design the workplace to suit functional capacity and body size of women
(Kilbom et al, 1998)



PAUCITY OF INFORMATION IN THE MINING INDUSTRY

Where are women currently working in the mining industry?



- ➔ Administration/management
- ➔ Engineering
- ➔ Plant operators

Prolonged sitting

Whole body vibration

Spinal muscle fatigue
Back pain & disorders

Johanning (2000); Hilborn (2000)
Chaffin & Andersson (1991)

What is the likely outcome for women exposed to these conditions?

Do we need to make any modifications to their work and on what basis do we make the modifications???



Musculoskeletal injury patterns from other industries

Women are at higher risk of WR-MSDs, in particular MSD of upper extremities

Treaster & Burr (2004); Chee & Rampal (2004); Ketola (2004); Werner et al. (2005); Lundberg (2002); Punnett et al. (2004); Dahlberg et al. (2004)

For example:

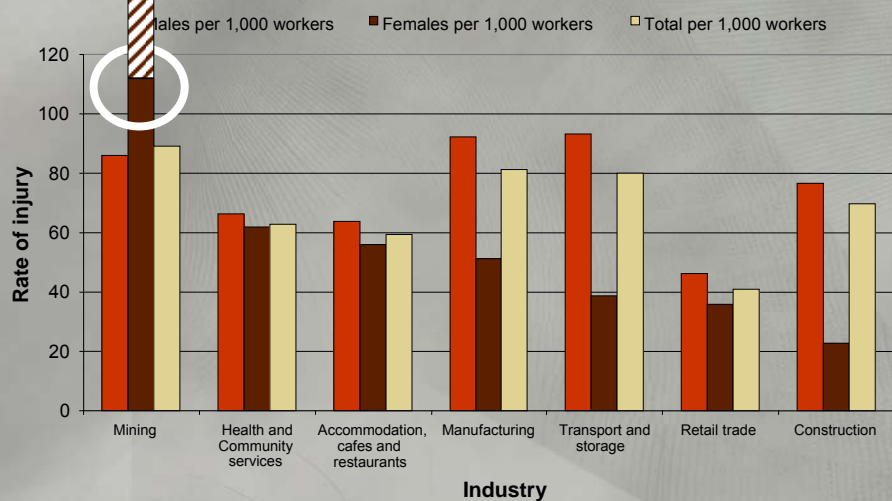
- Treaster & Burr (2004) conducted review on **56 articles** specifically on **gender/sex differences and musculoskeletal disorders**

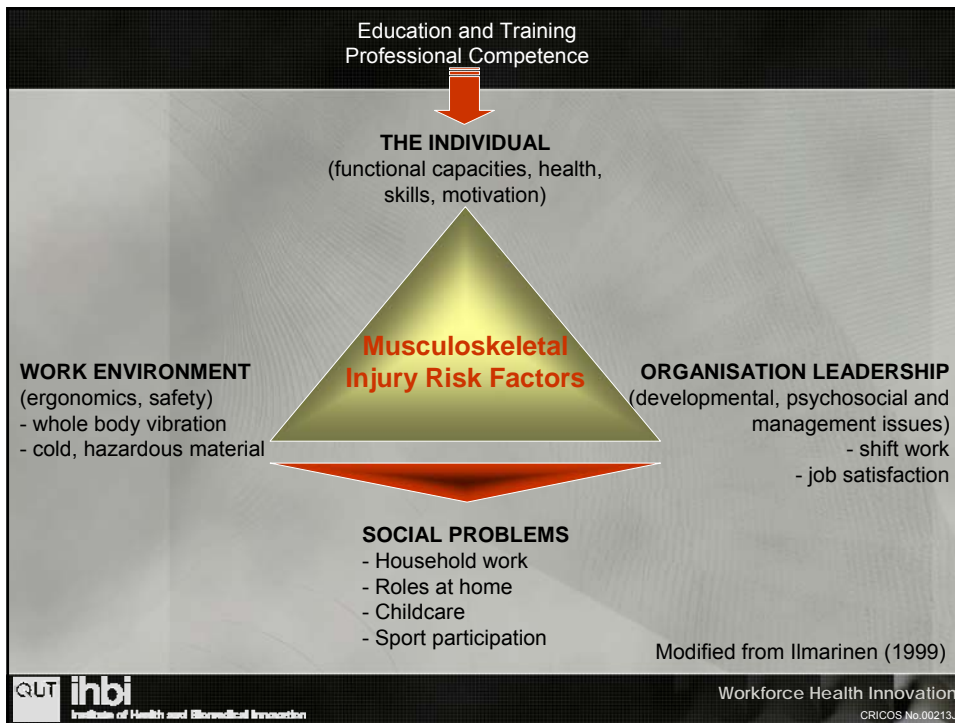
There is a strong evidence that women experience significantly more MSD

Type of data source
Work factors
Age

Work-related injuries

Industry work-related injuries (2000)





The major challenge

To ensure that the work and work tasks given to women are consistent with their physical and psychological capacity.

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The individual issues

96 males and 29 females were tested

Female officers had significantly:

- ↓ Leg strength
- ↓ Grip strength
- ↓ Back strength
- ↓ Chest strength
- ↑ Flexibility

Ergonomic design issues

Emergency vehicle

Partner mismatch
- Height
- Strength

Patient
- Size
- Weight

Equipment

Terrain/environment



Parker et al. (2001)

Solutions for preventing women from exposure to the musculoskeletal risk factors

- Work place design, ergonomics and work environment
- Interdisciplinary research requires:
 - A consideration of the biological differences between women and men
 - An independent exposure analysis – done separately for men and women
 - A recognition of the relationship between women’s paid and unpaid (household chores) work

Conclusion

“These women didn’t want to stand out as being different, and nor should they have had to. It was my behaviour that had to change. I really believe that, as a leader, you have an obligation to create a working environment that recognises and is inclusive of a diverse workforce.”

Wayne Osborne
Managing Director of Alcoa World Alumina Australia

ACKNOWLEDGEMENTS



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