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A simple program to address complicated injuries

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Abstract

Musculoskeletal disorders (MSD) are the most common injury type resulting in workers' compensation claims in Queensland. A common MSD prevention approach is employee manual handling training. The purpose of this paper is to evaluate the short- and longer-term effect of a simple, individualised behaviour change approach in the risk reduction of MSDs. The MSD risk reduction intervention comprises 4 stages at Newlands Northern Underground and was evaluated 6 months post stage 2 using industry standard measures and site KPI's. Each of the 3 industry standard measurements (when reviewed for all injuries and MSDs only), all demonstrated an absolute reduction of 25% or more.

Introduction

Musculoskeletal disorders (MSD) are the most common injury type resulting in workers' compensation claims[1], accounting for 52% of all 2008-09 claims. In the Queensland mining industry this injury type has increased in the past year costing the scheme in 2008 -2009 $25.5 million[2]. Poor postures, heavy, forceful and repetitive manual handling, access and egress are some of the many contributing factors to these injuries[1].

A common MSD prevention approach is employee manual handling training. "Bend your knees; Keep your back straight" is a key message of many posters, theory presentations, and group training programs. However, the question is whether these interventions affect sustainable behaviour change and individual characteristics across all MSD's not just back injuries.

In our experience, successful interventions require identifying an individual's highest risk, engaging individuals in the prevention process and educating them on the impact of their behaviours. Implementation of simple strategies is the first step towards reducing risk. As new behaviours become habit the next highest risk can be addressed. Maintenance of positive behaviour change then can become the focus.

The purpose of this paper is to evaluate the short- and longer-term effect of a simple, individualised behaviour change approach in the risk reduction of MSDs.

[1] Guide to the management of musculoskeletal disorders in the NSW mining and extractives industry September 2009, version 1.0

[2] QCOMP - 08/09 STATISTICS REPORT Raising the bar higher

Method

Site:
Newlands Northern Underground is a joint venture between Xstrata Coal (55%), Itochu Coal Resources (35%) and Sumitomo (10%). It is located in the Bowen Basin in Queensland, approximately 200 km North-West of Mackay. There are approximately 400 employees and contractor's onsite in this longwall underground mine.

Intervention:
The MSD risk reduction intervention comprises 4 stages:

Stage 1 – Initial on-the-job worker engagement with all crews for half of one shift (including discomfort survey, Work Ability Index and individual interview) to gain an understanding of the real physical job requirements and conditions.

Stage 2 – A designated training day comprised of task specific theory, realistic job simulation, one on one consult and individual coaching. Each individual was provided with specific education, practical cues and techniques to implement both at home and work to minimise risk. The nature and depth of the cues and techniques varied according to individual's risks and characteristics as well as reported discomforts, in order to maximise adherence to the self-managed program. Crew representatives were identified and nominated by their crews to monitor the application of the education provided from the job simulation.

Stages 1 and 2 took 3 months to complete with all crews.

Stage 3 – A 6 month review and practical on the job coaching (currently being undertaken). Each individual's plan is modified and progressed in accordance with their outcomes following a review of their risks (new and previously identified) and behaviour modification to date.

Stage 4 – A 12 month review for care and maintenance.

Outcomes:

Objective outcomes are assessed in line with industry standard measures of lost time injury frequency rate (LTIFR), total recorded incident frequency rate (TRIFR) and disabling injury severity rate (DISR). The calculation of these measures is by standard procedures of Newlands Northern Underground. Work Ability Index (WAI) questionnaires were also assessed.

A 25% or greater reduction in the 3 identified industry standard measures is *a priori* defined as being a clinically important change and was based on current key performance indicators of Newlands Northern Underground.

Qualitative outcomes being collected include discomfort surveys, feedback forms and follow up Interview.

Timeline:
Figure 1 below highlights timing of assessments alongside timing of the roll-out of stage 1-4. Of interest to results presented here is the change between review 1 (6 months pre stage 1) and review 2 (6 months post-stage 2).

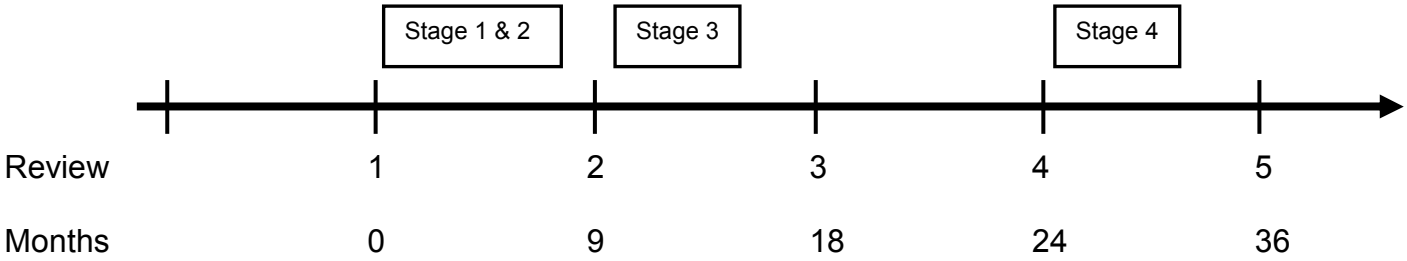
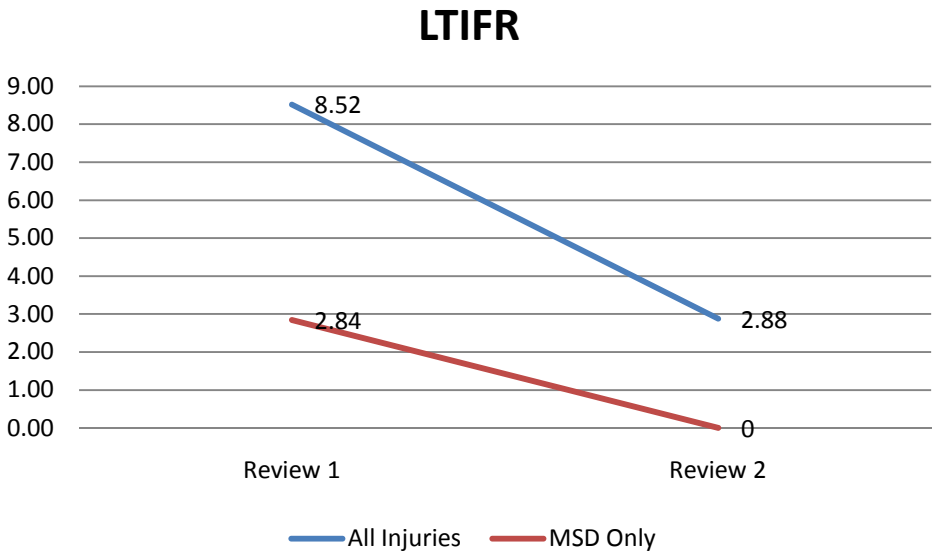


Figure 1: Timing of outcome assessment and the roll-out of stages 1 to 4.

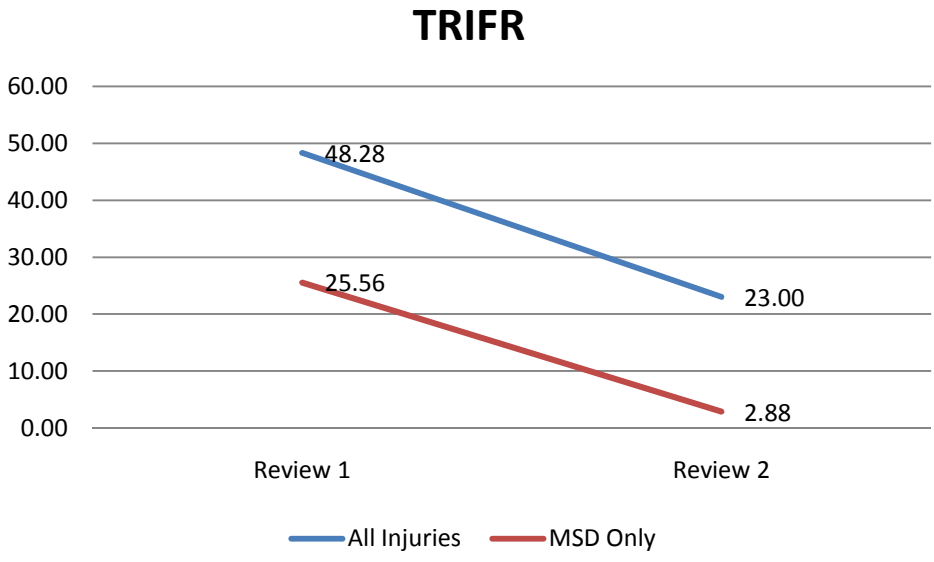
Figure 2 below highlights clinically important improvements in LTIFR from review 1 to review 2, with no MSD lost time injuries reported during the period of review 2.



LTIFR: Number of Lost Time Injuries multiplied by 1 million hours divided by hours worked in time period.

Figure 2: Lost time injury frequency rate outcome

Figure 3 below highlights that there was a clinically important reduction in TRIFR from review 1 to review 2, with only 1 recordable MSD injury during review 2. Of note, the injured individual during review 2 did not participate in this program.

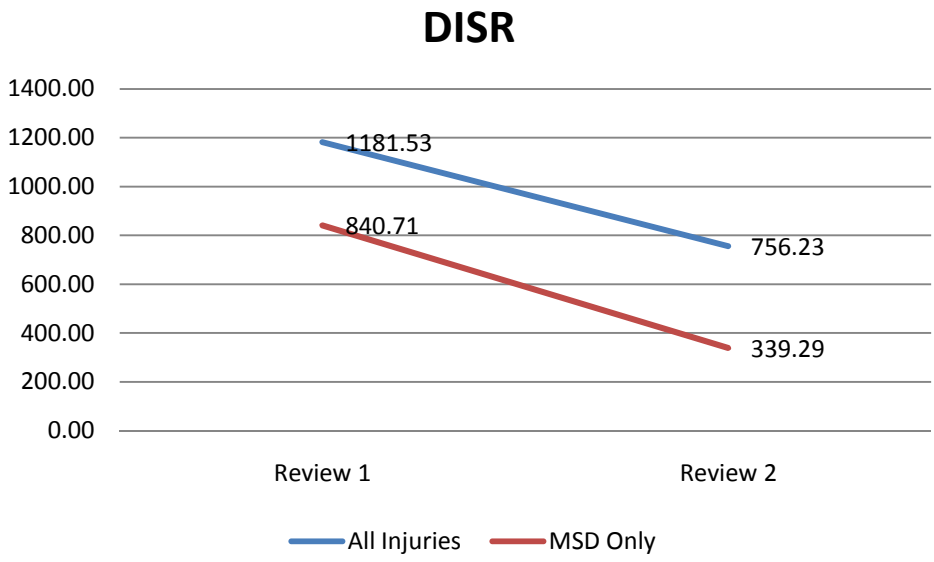


TRIFR: Number of Lost Time Injuries, Restricted Work Injuries and Medical Treatment injuries multiplied by 1 million hours divided by hours worked in time period.

Figure 3: Total recorded incident frequency rate outcome

Figure 4 demonstrates that there was a clinically important reduction in DISR from review 1 to review 2. The disabling days reported at review 2 are a combination of:

- One injury that occurred during the period associated with review 1 (i.e., prior to roll-out of stage 1 and 2). This injured worker continued on restricted duties throughout the period of review 2.
- One injury occurred prior to the individual's participation in stage 2, and moved from lost time to restricted duties during the period associated with review 2.
- One injury that occurred during the period associated with review 2. However, this individual did not participate in the program at all.



DISR: Number of days (lost and restricted) multiplied by 1 million hours divided by hours worked in time period.

Figure 4: Disabling injury severity rate

As shown in figure 5, absolute reductions observed in LTIFR, TRIFR and DISR were greater than 25% (the predetermined level considered as being clinically important).

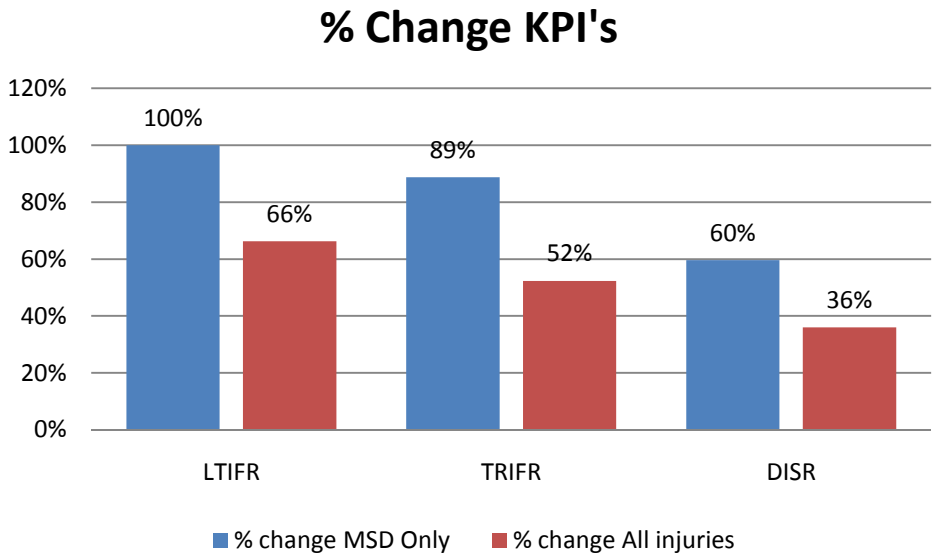


Figure 5: Percentage change in KPI's for LTIFR, TRIFR and DISR for both MSD only and all injuries

The average work ability index scores at review 1 below (figure 6) indicate “good” (score of 37-43) work ability of longwall, development and maintenance crews. However, the average work ability of outbye is “moderate” (score of 28-36).

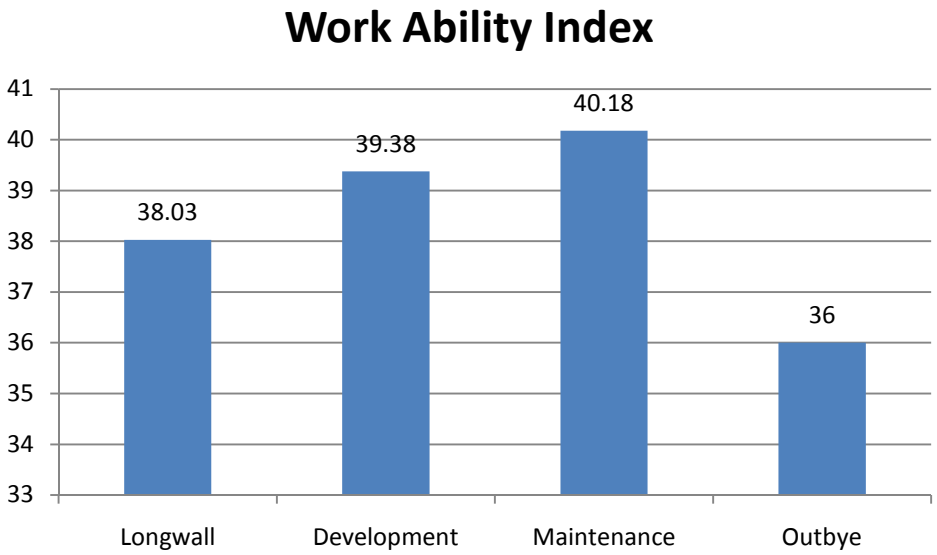


Figure 6: Average Work Ability Index Scores at Review 1

The scores of the discomfort surveys (figure 7) are derived from each individual’s reported pain sites and experienced frequency. All departments experienced a positive change in their reported discomfort as reported at stages 1 and 2. Maintenance experienced a small and insignificant change however this could be explained by the fact that the initial scores were very low.

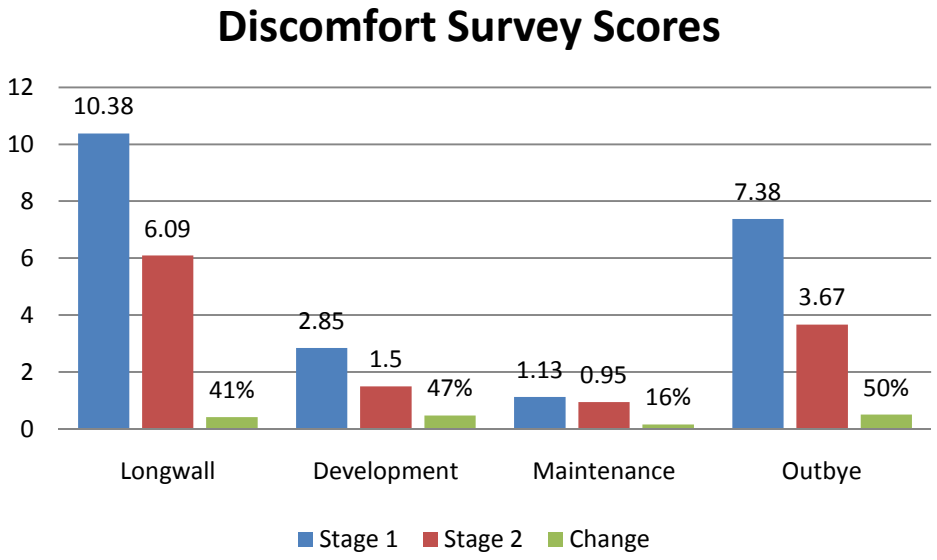


Figure 7: Discomfort Survey Scores measured at Stage 1 and Stage 2

Figure 8 below highlights that approximately two thirds (68%) of participants reported that they will completely use the information received during the intervention, with a further 29% stating that they would use the information received 'somewhat'.

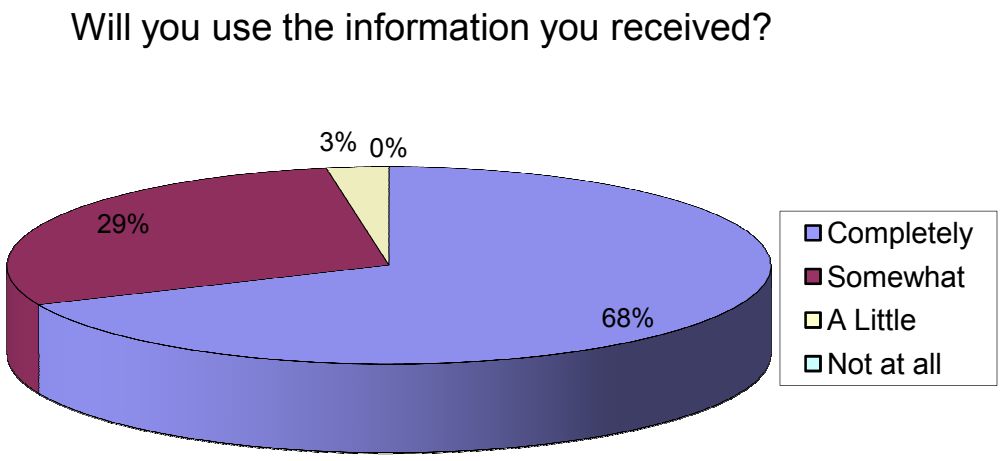


Figure 8: Feedback on participants' utilisation of intervention

Feedback forms were collected following stage 2. Nearly 90% of participants scored the intervention 8+ out of 10.

As part of the program, an indivduial was nominated to be a representative for each crew to be contacted for follow up monitoring 4–8 weeks after their crews stage 2 intervention. Follow-up interviews suggested improved communication when completing tasks between crew members, particularly regarding appropriate technique for any given task. A representative stated "Most people are thinking about what they are doing and looking at their body movements a lot more, the guys got a lot out of the training day". Each representative was positive when talking about the program and they also reported that their respective crews have obtained a wide range of useful ideas and information that have helped them in their roles.

Discussion

While the program is continuing, results to date objectively indicate it is associated with company benefits. Specifically, reductions in LTIFR, TRIFR and DISR of 100%, 89% and 60%, respectively, for MSDs have been observed at review 2.

Interestingly there were significant reductions in LTIFR, TRIFR and DISR for all injuries. It is our contention that this may be a result of increased general awareness associated with the training and education provided on the nature and impact of behaviours and risk.

Qualitative comments from staff suggest that the program has been positively received and will influence the manner by which tasks are completed.

There is ample evidence that changes in culture and behaviours, such as those that have contributed to these program outcomes, require regular reinforcement to sustain them long-term. Further monitoring and evaluation of program outcomes at the completion stages 3 and 4 will help inform planning for the frequency and intensity of the ongoing 'care and maintenance' interventions to ensure positive outcomes are maintained.

Conclusion

At this early stage of such an extensive intervention it is clear that stages 1 and 2 have had a positive impact on injuries at Newlands Northern Underground. The completion of stages 3 and 4 and the subsequent reviews will reveal whether this program influences outcomes in the longer-term.