The implementation of interventions to prevent musculoskeletal injury at work and the stage of change approach

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

September 2016

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Thesis abstract

Background

The targeting of injury prevention advice according to behaviour change principles has been proposed by researchers as a means for improving the effectiveness of advice. However, despite promising results, this has not been adopted by practitioners.

Aims

The aim of this thesis is to review contemporary approaches to the application of the behaviour-change approaches in the development of workplace injury prevention interventions; evaluate the implementation of stage of change based ergonomics advice; evaluate its effectiveness in musculoskeletal injury prevention; and to explore the barriers and facilitators to its adoption by practitioners.

Methods

A mixed methods approach was used, comprising a literature review/discussion paper and three inter-related studies.

Results

Literature review/Discussion paper

The structuring of injury prevention advice according to behaviour change principles has been most frequently applied using the Stage of Change (SOC) framework. However, despite favourable results there is little evidence that this has been adopted by practitioners. The translation of research findings into professional practice has been hindered by a ‘research-practice gap’ and the need to actively engage practitioners in the research process.

Study 1

The managers of 25 workgroups, across a range of sectors were allocated to receive either standard ergonomics advice or ergonomics advice tailored according to the workgroup SOC profile. Twelve months later managers who had received tailored advice were found to have implemented significantly more recommended changes (IRR = 1.68, 95% CI 1.07-2.63) and more “additional” changes (IRR = 1.90, 95% CI 1.12-3.20). The findings suggest that the
implementation of ergonomics recommendations may be improved by the tailoring of advice according to SOC principles.

**Study 2**

Injury data on 169 workers (from 21 workgroups) who had been randomly assigned to receive standard ergonomics advice or advice tailored according to the SOC approach was analysed. Workers in receipt of tailored advice were 55% (OR=0.45, 95% CI 0.19-1.08) less likely to report a compensable injury than those in receipt of standard advice. While the effect was not statistically significant at a 0.05 level (p=0.073) the observed outcomes support the potential value of the SOC approach when planning injury prevention programs.

**Study 3**

The barriers and facilitators to the adoption of the SOC approach were investigated in a series of practitioner focus groups and a subsequent survey of members of the Human Factors and Ergonomics Societies of Australia and New Zealand. A proposed SOC assessment tool was presented and its perceived utility critiqued. The results suggest the limited application of a SOC based approach is due to the absence of a suitable tool, the need for training and limited access to research findings.

**Conclusion**

The SOC approach has been proposed as means to improve the implementation and effectiveness of ergonomics advice. Despite some encouraging results there is little evidence that this has been adopted by practitioners. This translation of research to practice may have been hindered by a lack of engagement with practitioners, and the absence of a suitable assessment tool.

This thesis has addressed these issues in a series of inter-related studies. The outcomes are an improved evidence base for the potential effectiveness of the SOC approach, an investigation of the barriers and facilitators to its adoption by practitioners and their engagement in the development of a draft SOC assessment tool.
Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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Signed:

Date:  January 16, 2017
Conference presentations resulting from this thesis


Peer-reviewed journal articles resulting from this thesis


Acknowledgements

PhDs, while a solitary activity, are only completed with the support of others. I would like to acknowledge the support of my supervisors, Professor Jonathan Karnon and Dr. Paul Aylward, who agreed to be supervisors even though my topic fell well outside their usual area of interest. In many ways this proved to be beneficial as they were able to pose questions and raise issues I would not otherwise have thought of. Their insightful feedback on draft manuscripts certainly helped to improve the quality of my writing. Similarly, Jodi Gray also provided valuable input in the latter part of my studies, particularly with her data management skills.

I would also like to thank Professor Dino Pisaniello, who initially set me on this research path when I joined the University of Adelaide in 2009. A final professional thanks must go to my friends and colleagues Dr. Jodi Oakman and Dr. David Tappin. Like me, they both embarked on late career changes from professional practice to academia, and have been generous in their support.

On a personal note, I must thank my wife, Jody Rothmore, and my children, Molly and Eliza. On numerous occasions I have travelled to national and international conferences in order to present the results of my research in order to meet, and seek valuable feedback from professional colleagues. While these trips certainly enhanced my research it also placed an increased burden on them.

While the completion of a PhD signifies the end of a process there is much work still be undertaken in the field of injury prevention. There are numerous strands of research from this PhD I would like to pursue – funding permitting.
# List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>HFESA</td>
<td>Human Factors and Ergonomics Society of Australia</td>
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<tr>
<td>HFESNZ</td>
<td>Human Factors and Ergonomics Society of New Zealand</td>
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<tr>
<td>MSD/s</td>
<td>Musculoskeletal disorder/s</td>
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<td>MSPD</td>
<td>Musculoskeletal pain and discomfort</td>
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<tr>
<td>OHS</td>
<td>Occupational health and safety</td>
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<td>SOC</td>
<td>Stage of change</td>
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<tr>
<td>TTM</td>
<td>Transtheoretical model</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
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<td>USA</td>
<td>United States of America</td>
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