

Where is all the Research? Research projects for your company.

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In the course of our work, there is a lot of questions raised with no simple answers.

Should we invest in this health program for our employees? Should we be spending money on ergonomic devices? Does manual handling training work? Should we invest in an ergonomic risk assessment training at our workplace? Will it reduce our musculoskeletal injury rate? How do I stop traffic accidents on my site? Why are the workers so cynical to our injury prevention programs or weight loss programs? What does the Evidenced Based Research indicate?

What Does the Evidence Say?

As practitioners and safety professionals before we embark on any safety programs / worker health initiatives, we can do a little bit of research to see what is proven to work and what doesn't – the term for this process at the moment is "Evidence Based practice". But this is by no means a simple process – as sometimes you are comparing apples with oranges??

Will a Stretching program be beneficial at our workplace?

Well lets go through the process of what you may do – if a stretching program was suggested at your worksite.

One study identified a 6 month controlled pre-test – post test intervention study. Population was 469 Firefighters – 251 experiment group and 218 control group. They assessed range of motion in low back, hamstrings and shoulders and the outcome variable was incidence of musculoskeletal injury, time loss, treatment costs from the workers over 2 years. Findings – There were 48 injuries to the stretchers and 52 injuries to the non-stretchers (no significant difference). The total dollars spent because of injury (time loss + medical expenses) was \$82,372 for stretchers versus \$235,131 for non-stretchers or the controls (not statistically significant $p = .056$). However a breakdown of costs found time lost for stretchers were significantly lower than controls (\$45,597 versus \$147,581 $p = .026$), while medical costs were not significantly different between the groups (\$39,775 stretchers versus \$87,550 controls $p = .191$)

Study weaknesses:

No analysis as to why stretchers had more time off work – was it just due to stretching or could there be other factors. The Hawthorne effect? A better rehab officer?

At the end of this study they identified further questions, raised from this analysis:

1. Is stretching beneficial for those with hypermobility, normal ranges of motion or only those with hypo mobility? Could stretching be detrimental for some workers?
2. In terms of lower back pain, should stretching focus on flexion or extension?

3. Is stretching beneficial only for the low back? - they found no references that specifically addressed stretching for the prevention of neck, shoulder, knee or wrist injuries in working populations.
4. Is there an ideal time of shift for stretching? For example should workers stretch at the start of their shift or just prior to some exerting task?
5. What constitutes a quality stretching program? Are 5 or 10 minutes sufficient to stretch the entire body? How many repetitions are needed to gain maximum benefit? Are all stretches equally effective?

One paper in 2003 found had analysed all the published studies which linked lower back pain to a stretching program. Overall – mixed findings – with some demonstrated benefits of stretching at work - Their findings – that the methodology was poor quality and further studies should reduce threats to internal and external validity, have control groups and use appropriate follow up periods and present a more detailed description of the interventions and worker population.

So – if someone asks me is there evidenced based research that displays the benefits of stretching what do I say? There are still a lot of unanswered questions out there that need following up. So my conclusions to this – it is really important to look at the study design and all the possible confounding factors and threats.

There are big gaps in the published literature

As safety and health practitioners, it is difficult to prove that an intervention or program should be done or not. Look simply at this example of stretching at work.

Earlier in my career, I would be very frustrated at the types of research projects universities undertook. My pet hate was “perceptions of students” type studies. Why were there not useful studies on relevant to my work area.

However over time, I have come to realize that the responsibility has to be with the practicing clinicians or industry to identify what the gaps are. We are the ones with the questions and we should also be the ones coming up with the solutions too – or contributing to the body of evidence.

Collaboration with Industry

Researchers at universities generally struggle to find their client groups – if they work alone.

Companies do not have the research knowledge and understanding of the nuances of research design to do this – unless you have staff members who have an interest in doing a research qualification or doing research.

There are already a number of departments at universities or well funded research projects funded by insurance company to try and establish some answers to the questions they ask. While this can be spearheaded from an industry perspective, my recent experiences with doing a research project in my own business has identified the benefits at a lower level.

What does a well designed study mean?

There are different levels of studies – depending on what is being studied:

Basically there are four types of study designs – one being the most effective

1. Randomised clinical trial
2. cohort studies
3. Before-after studies
4. Descriptive statistics

Other research designs are single case studies and qualitative studies. Each type of study have their merits, but they usually have disadvantages too. You have to be very careful when designing a study due to all sorts of bias.

For example:

If you were to prove that introducing an ergonomic risk management training to all staff was worthwhile investment to reduce injuries. This becomes your hypothesis.

Outcome: Reduction in musculo-skeletal injuries and the associated costs

Set up an intervention group and a control group. We need each group to be blinded – so they don't know exactly which group they are in.

Group one (Control)– you may give very general training on risk management

Group two (Intervention) – you may give specific detailed knowledge on identifying ergonomic or manual handling risk factors.

Factors to consider:

1. Intervention and control group
2. Blinding or masking the participants – so they are not aware of which group they are in – considers the placebo effect and Hawthorne effect
3. Blinding or masking the assessors of the injury statistics

Ethical Approval

In addition, if you wanted to do a research project as described above and publish your findings in a national or international peer reviewed journal – you will need to go through an Ethical Approval process.

designed and conducted in accordance with the Australian Code for the Responsible Conduct of research 2007; and ethically reviewed and monitored in accordance with the national Statement on Ethical Conduct in Human Research 2007.

So Steps to Turning an Intervention at your workplace into a well designed research project:

1. Do you have an intervention you are about to do – if you are doing it anyway – then you may be able to consider turning it into a research project and writing up the results into a peer reviewed journal.
2. Collaborate with a university – they have research design experts who will be able to help you set up a study design or look at the survey you have written. If there is involvement of people then ethical approval will be required. This is basically a submission of the project to a panel, who ensure the research design has not breached basic human rights.
3. Complete the project following the design agreed and record the results.
4. You may do the data analysis at your workplace or send them to the university for analysis.
5. The university with your company based project officers can write a paper or assist you do this and you may be one of the collaborating authors.

Why should we do this?

1. For research to be relevant – industry needs to identify the issues and take it to experts to help them substantiate what they are doing
2. There is a lack of knowledge out there – more research needs to be done to fill the knowledge gaps
3. Funding for research – can be difficult and inaccessible
4. Incorporating research projects into your workplace can re-ignite your staffs interest and ownership. Inviting your staff to be research project officers, may improve morale and enhance staff retention.
5. To make sure we are practicing evidence based treatments / interventions by providing information on what actually works.

Some Research Universities / Centres

University of Queensland - Minerals Industry Safety and Health Centre (MISHC)

James Cook University – Public Health Department

La Trobe University – Centre for Ergonomics and Human Factors

References:

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