Musculoskeletal disorders in residential construction: what builders do to prevent them

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1. Introduction

Musculoskeletal disorders (MSD) have long been recognised as a problem in residential construction (e.g. Schneider, 2001; Podnice, 2008), and they are no less an issue in New Zealand. An analysis of 2005-07 data from the national insurer (ACC), for house construction workers found that 42\% of all claims were MSD (Hide, Tappin, McDonald, 2009), while a taxonomy report on ACC residential construction claims of significant cost found that 44\% of these were soft tissue claims, most of which were MSD (Lehfeldt & Kahler, 2013). In residential construction, the risk factors for MSD can be numerous and overwhelming at times, given the varied, unpredictable and time-pressured nature of project work. On the one hand this varied nature can be a protective factor in that exposure to high MSD-risk tasks may be limited, but on the other hand it can make it more difficult to provide builders with an understanding of the wide range of cumulative MSD risks they may be exposed to. The common occurrence of MSD in residential construction may also mean that they become accepted as an inevitable consequence of the work. Additionally, people who are new to the industry in particular may be unaware of cumulative MSD risks, or they may not be concerned about them. As the industry is comprised of small businesses, and is sensitive to fluctuations in work demands, this also makes it much harder to provide the industry with information and guidance on injury prevention and measures to reduce MSD risk are not likely to appeal unless they also offer improvements in productivity for builders.

Addressing MSD prevalence and claims costs in residential construction is therefore a high priority for ACC and the main industry associations in New Zealand for residential builders. A systems perspective was applied to the development and implementation of this ACC-funded and industry-facilitated study which was undertaken in 2014 to identify builder-initiated measures to reduce the high cost of musculoskeletal injuries to builders and reduce the number of workplace claims.

2. Methodology

A sample of 61 residential builders from three New Zealand cities (Christchurch, Wellington and Auckland) was recruited through the two main residential builders Associations. These three cities were targeted due to the high levels of residential building taking place (new, rebuilding, and renovations). Presentations about the MSD study were made at regional meetings of each Association, and builders who were prepared to be involved provided their contact details. Approximately half of the sample owned the business, with the other half being employees within these businesses.

The approach adopted for this project was based on an earlier study in the meat processing industry (Tappin, et al., 2007) where measures taken to address MSD were collected from people working in the industry and then prioritised and supported by a national stakeholder group. The main reason for using this approach is that it identifies successful measures that are already in place, overcoming some concerns around implementation barriers, and increasing the chances of others in the industry adopting these measures by demonstrating that they are feasible and therefore worth considering.

In the present study, semi-structured interviews took place with the builders on building sites (n=46) or at another location convenient to the builder at that time (n=15). Questions asked of builders included their thoughts on MSD risk factors, what measures they took to address MSD in their work, the success of these measures, barriers or problems they encountered and how they dealt with these, and other plans or ideas they had for addressing MSD in residential construction. Interviews took between 15 and 90 minutes, with an average duration of 40 minutes. Builders experience ranged from 1-55 years, with an average of 20 years across the sample. The responses from all the interviews were collated, with many similarly worded measures combined together, and presented in a report for the industry associations and ACC for deciding on measures to prioritise with their members.
3. Findings

Some 164 measures were identified, organised under 26 headings within three broad groups: work organisation, work practices, and work equipment. These measures were supplemented with support from the research literature where it exists, along with the researchers’ views on which of the measures identified have most potential to reduce MSD risk based on research findings and knowledge of the residential construction sector in NZ. To provide an overview, these measures and the headings that they fall under are combined into Figure 1 below.

![Figure 1](image)

Figure 1. A summary of MSD measures most mentioned by builders and considered to have the most potential to reduce MSD risk.

4. Discussion

The findings from the study represent the voice of builders, recognising them as subject matter experts rather than relying on more traditional approaches to assessing MSD risk from which potential interventions are then derived. Most significantly, builders mentioned these measures because they had found them to be effective or perceived that they would be. A common theme through the interviews was that risk reduction was secondary to saving time, money, or materials. Indeed, the point was frequently made that in most situations safety ideas had to make business sense to be considered at all, arguably making their application to the wider industry more feasible.

Since completion of the report, ACC and the residential building Associations have discussed the next steps for developing and implementing findings from the report. The support of these industry associations is considered critical for prioritising and contextualising the measures, and lending their weight to their dissemination throughout a sector of small businesses that are otherwise difficult to access en masse. Underpinning these next steps is recognition of the variations in work arrangements, work activities and work sites that builders are exposed to, as well as the need to tailor the measures to match the needs and expectations of the builders. Differences between the types of houses that builders are involved with, how they are built, and regional variations will have an effect on how applicable they are. Additionally, the measures are made in the context of reducing MSD risk, not all risks associated with health and safety. There are also measures that could be included under
more than one heading and there are also obvious links between similar measures and between several headings. Finally, the measures should not be judged in isolation as the most effective way to address MSD is with a collective approach involving the implementation of multiple measures.

The study had limitations, most notably the small sample of builders involved in the project. It is unknown therefore how representative the sample of builders from the study is of the wider industry, limiting the applicability and generalisability of the measures identified. The measures are also what the builders thought was important, and therefore are not definitive. For example, there is more focus on physical risk factors and less on psychosocial factors. Research on MSD in residential construction however shows congruence with many of the measures in this report. A final limitation to mentions is that the development and implementation of measures may be quite different between labour-only builders and owners of building companies. As builders were invited to participate, it is likely that the sample was biased towards people already considering MSD (Village and Ostry, 2010). Therefore, the readiness for change (Rothmore, Karnon & Aylward, 2013) is also something that needs to be considered in any subsequent development of these measures, with ‘best practice’ ideas for those who are already taking action, and education and awareness raising about MSD for those not intending to take action on MSD.

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References


