

How to lift training: An analysis of survey responses

Final report prepared for Workplace Health and Safety Queensland

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November 2021



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Executive summary

Background

Musculoskeletal disorders (MSDs) are a significant workplace problem representing over half of all serious claims in Queensland, with the majority attributed to hazardous manual tasks. MSDs are complex disorders caused by exposure to a range of physical and psychosocial hazards at work. Despite the complex nature of MSDs, industry prevention approaches to manage the risks are typically not well aligned with what is required in the work health and safety (WHS) legislation and the evidence base. One such approach, how to lift training (HTLT), defined in this report as workplace programs that typically train workers in lifting techniques such as bending the knees, keeping a straight back, using a power stance and /or focus on core strengthening and abdominal bracing and/or include exercises for warming up or stretching, remains widely used.

Workplace Health and Safety Queensland (WHSQ), the WHS regulator, consider MSDs as a priority area for the focus of their advisory and compliance activities. WHSQ has surveyed employers, providers, and workers to gain a better understanding of the persistent use of HTLT in organisations, as well as industry stakeholders' knowledge and beliefs of around HTLT. This work will inform future strategies to improve MSD prevention programs and ensure industry resources are directed where they will have most impact.

The objectives of the current study were to:

1. Improve WHSQ's evidence base on the prevalence, beliefs and drivers that result in the continued use of 'how to lift' types of training programs for hazardous manual tasks (HMTs)
2. Inform WHSQ strategies to assist stakeholders to pursue more effective approaches to managing the risks arising from hazardous manual tasks (HMTs).

The specific aims of the survey were to:

1. Understand industry stakeholder knowledge, beliefs, and practices on conducting HTLT in workplaces
2. Determine whether stakeholders know that such training, as defined in the survey, is not evidence-based
3. Understand the key drivers for providing HTLT style training in workplaces
4. Identify associations between demographic, knowledge, belief, and behaviour characteristics of respondents
5. Elicit what else industry is doing to manage musculoskeletal disorder (MSD) risks from hazardous manual tasks

6. Establish any associations for stakeholder behaviour and preferences for learning and gathering information about managing HMT.

Methods

WHSQ developed a 42-item questionnaire, which included 32 quantitative questions and 10 qualitative open questions requiring free text responses. The questionnaire was structured with seven initial questions for all respondents. Following the initial questions, the questionnaire was then divided into three stakeholder branches for employer, workers, and work health & safety providers/others. Questionnaire measures covered basic demographic data: state, sector, organisation size, work health and safety (WHS) education level. To explore HTLT, the following areas were covered; beliefs on HTLT, use of HTLT, activities used to manage HMT, access to information and messaging preferences. The HTLT survey was distributed to industry stakeholders during July and August 2020.

Findings

A total of 1930 responses were received, 119 were removed as they were incomplete, leaving 1811 usable questionnaire responses, 1271 (70%) employers, 204 (11%) workers, 314 (17%) WHS providers or other.

Most respondents were in QLD (76%) with NSW the second largest group of respondents by state (14%). In relation to sector, most responses were received from Construction (19%), followed by Health Care (14%), Manufacturing (12%), then Education and Training (10.5%).

The prevalence of HTLT is high with almost 80% of employers reporting the use of how to lift training. For providers, 61% were using HTLT, whilst 62% of workers had received HTLT. Less than half of employers reported using high order controls.

In relation to beliefs, over half of respondents consider HTLT is an effective strategy for reducing injuries. Over 85% of respondents consider it is necessary to include HTLT as part of a sprain and strain prevention program, whilst over 75% of respondents believe it is a requirement to use HTLT training to meet WHS legislative requirements.

For employers, the level of WHS qualification in the organisation, being a large organisation, and having stronger beliefs that HTLT was a legislative requirement, were strong influences on the use of HTLT. There was also a theme from the qualitative data that HTLT mitigates the risk of damages claims and liability. For providers, being asked to provide HTLT was the strongest predictor of whether they

would provide HTLT, regardless of their location, sector, education level or background and regardless of their belief in the effectiveness of HTLT.

The respondents expressed a preference for messaging about HMT from regulators using video, film and case studies. Social media was not preferred as a messaging option by all three groups.

Conclusion

Results from the survey analysis indicate there is high prevalence of use of HTLT. A widespread perception exists for both employers and providers that HTLT is a legislative requirement. Also, beliefs and practices within the statutory workers compensation and common law areas may be driving the use of HTLT and needs more study.

To effect a change in the current practice of using HTLT, targeting of employers is important to address two key misconceptions: 1) that HTLT is a legislative requirement and 2) it constitutes an effective MSD prevention strategy. Providers have indicated that they will provide HTLT as a service if they are asked, even if they do not believe it to be an effective strategy. Therefore, changing the beliefs of employers is a critical part of achieving change in practice, while also working with providers to develop strategies to ensure they support only evidence-based interventions. Employers need to understand there is no role for HTLT in fulfilling either legislative requirements or in managing HMTs. There are a number of other unique stakeholder groups who need to be considered and involved in the solutions. Work with peak bodies, employer associations, accreditation bodies, workers compensation insurers and the legal fraternity to address findings from the current analysis will also be important.

Further qualitative research would enable a deeper examination of stakeholder beliefs in the relationship of the role of HTLT and MSD prevention beyond those raised in the current study and importantly improve understanding of what is required to change current practices.

Expanding, and communicating widely about, current WHSQ work enforcing HMT risk controls and suitable and adequate training to support the controls may be a useful inclusion to change industry practice away from using HTLT toward high order controls.

How to lift training: An analysis of survey responses

Purpose

This report provides the results from data analysis of a survey on 'How to lift' training (HTLT) undertaken by Workplace Health and Safety Queensland (WHSQ). How to lift training programs were defined in the survey as workplace programs that typically train workers in lifting techniques such as bending the knees, keeping a straight back, using a power stance and /or focus on core strengthening and abdominal bracing and/or include exercises for warming up or stretching.

WHSQ, the Queensland work health and safety (WHS) regulator, were interested in understanding the reasons why HTLT continues to be used in industry. From a WHSQ perspective, the ongoing use of HTLT may be a barrier to compliance with the WHS legislation and implementation of effective MSD prevention programs focussing industry resources away from evidence informed strategies.

Following a request for proposal process, WHSQ contracted the team at La Trobe University to review the survey results and present the analysis and interpretation in this report. WHSQ personnel assisted in the co design of parts of the analysis and contributed to the report.

Background

Musculoskeletal disorders (MSDs) are a significant workplace problem, which remain despite a range of prevention programs aimed at reducing their prevalence (Safe Work Australia, 2016; Oakman, Clune & Stuckey, 2019). The impacts of MSDs are substantial (Schofield et al, 2013). A global burden of diseases study indicates that low back pain and neck pain account for the highest and ninth highest (respectively) years lived with disability (Vos et al., 2020). Workplace Health and Safety Queensland (WHSQ) report 60 per cent ¹ of all serious workers compensation claims are for MSDs with over half of these caused by hazardous manual tasks (HMT). Queensland business costs and disruptions are significant with \$342,836,165 in statutory costs and 950,026 days off each year¹

MSDs are complex disorders caused by exposure to a range of physical and psychosocial hazards at work (Eatough, Way, & Chang, 2012; Gerr et al., 2014). However, prevention approaches are typically not well aligned to address this complex nature of MSDs (Macdonald & Oakman, 2015). WHSQ have identified that industry MSD prevention interventions are poorly informed by the work health and

¹ Source: Queensland Employee Injury Data Base (QEIDB) July 2014 and 30 June 2019, Accepted and work-related claims only.

safety (WHS) legislation and research evidence base and are often focussed on addressing individual worker's behaviour rather than the broader systems of work. How to lift training (HTLT) is an example of an ineffective intervention that is directed at workers to encourage them to alter their behaviour, focussing on changing how an individual undertakes a task. HTLT does not address hazards at their source. HTLT is not considered as suitable training as required by the Queensland and Model Work Health and Safety Regulation 2011 (WHS Regulation, 2011). Despite legislation and advice provided by WHSQ and other national WHS regulators, the use of HTLT continues to be widespread.

Risk management

Persons conducting a business or undertaking (PCBUs) are duty-bound under WHS legislation to manage the risks of an MSD associated with HMTs as outlined in section 60 (1) of the WHS Regulation. Section 60 (2) of this regulation states that all of the relevant matters that contribute to an MSD must be considered when determining control measures. These contributing factors include:

- (a) postures, movements, forces, and vibration relating to the hazardous manual task; and
- (b) the duration and frequency of the hazardous manual task; and
- (c) workplace environmental conditions that may affect the hazardous manual task or the worker performing it; and
- (d) the design of the work area; and
- (e) the layout of the workplace; and
- (f) the systems of work used; and
- (g) the nature, size, weight or number of persons, animals or things involved in carrying out the hazardous manual task.

In addition, the HMT regulation requires a risk management approach under Chapter 3, Part 3.1, sections 32 to 38 (WHS Regulation, 2011). The regulation stipulates identifying hazardous manual tasks, and managing the risks associated with hazardous manual tasks utilising the hierarchy of control. From the regulator's perspective HTLT is not a control. HTLT does not take into account the requirements in the legislation relating to risk management of hazards where they are controlled at their source. In using the hierarchy of risk controls, the role of training is to inform workers about and support control measures that are in place. Further information on the management of hazardous manual tasks is provided in the Hazardous Manual Tasks Code of Practice 2021 (HMT COP, 2021).

Research highlights two basic requirements that are needed for effective risk management of occupational health problems with multiple causes, which includes MSDs (Oakman, Clune, & Stuckey,

2019). Firstly, all sources of risk must be addressed, physical and psychosocial, with risk control actions undertaken within the context of the hierarchy of risk control. Secondly, highest priority must be given to actions that eliminate or at least reduce the severity of a hazard, to be maximally effective (HMT COP, 2021).

Figure 1 The ergonomics systems model

Training

PCBUs must provide suitable and adequate training (WHS Act, 2011; WHS Regulation, 2011) and instruction to support their implemented risk control measures (Safe Work Australia, 2018; WHS Queensland, 2021). Section 39 of the Queensland and model WHS regulation requires that suitable and adequate training must take into account the nature of the work carried out by the worker; the nature of the risks associated with the work; and the control measures implemented. The information outlining what is suitable and adequate HMT training content, does not include HTLT.

Lifting technique training

A large body of evidence reports that technique training, referred to as manual handling training and lifting technique training (for example HTLT), is ineffective in reducing MSDs (Haslam et al., 2007; Verbeek et al., 2012). A Cochrane review of the effectiveness of lifting training on incidence and intensity of backpain was undertaken by Verbeek et al. (2011), updating an earlier review by Martimo et al. (2007). This review included eighteen studies (nine randomised trials and nine cohort studies) and reported moderate quality evidence that lifting training made no difference to workers experience of back pain for both the intermediate and long term. Similarly, reviews by Martimo et al (2008), and Haslam (2007) (later updated by Clemes et al. (2010)) concluded that lifting technique training is not effective for the prevention of work-related back pain or other MSDs.

A review by Hogan et al. (2014) suggested that while workers may gain some knowledge about lifting technique and biomechanics, the training did not result in a reduced incidence of work-related MSDs. Thirteen studies were included and while a few studies showed some association between lifting techniques and a reduction in work-related MSD, most were of low quality. By comparison, seven studies (2 'excellent quality' and 5 'good quality') demonstrated that lifting technique training did not reduce the number of work-related MSDs.

Stretching activities are commonly included in HTLT programs. Much of the stretching literature relates to the sporting domain and consequently interpretation in work settings requires caution. However, moderate to strong evidence suggests that stretching prior to physical activity is not effective in reducing injury. An early review of evidence (Herbert and Gabriel, 2002) reported on two studies which strongly supported that stretching does not reduce injury risk. A 2008 review (da Costa & Vieira, 2008) of 7 studies of stretching for prevention of MSDs found mixed, low-quality evidence on effectiveness of this strategy to reduce injury. Many studies on stretching are related to the sporting arena and are not suitable for generalising to work settings. Stretching is focussed on changing individual behaviours rather than addressing all relevant hazards, which is a fundamental requirement for effective MSD prevention.

WHSQ experience

Despite research regarding the ineffectiveness of HTLT, WHSQ representatives report a high prevalence of HTLT programs across industry. Data collected through industry campaigns and inspector compliance activities highlights that many employers do not effectively identify hazardous manual tasks risk factors or implement suitable controls to address risks relevant to the prevention of MSDs. Inspectors report that many employers do not provide suitable and adequate training, many cases provide no training, or just HTLT. Both scenarios are ineffective and not compliant with the WHS legislative requirements for training.

One example is the Leadership in Major Contractors (LMC): preventing sprain and strain injuries campaign (phase 2, 2017-2019). An audit process found only 8 out of 29 principal contractors delivered induction training with information on HMT risk management. The remaining principal contractors (n=21) either did not provide any HMT risk management content in their induction training or provided a generic HTLT session or general WHS induction information including for example one slide on HTLT. Preliminary findings from a different program, the MSD Response inspector assessment program, indicate that many workplaces continue to rely on individual worker focused interventions such as job rotation and how to lift training.

In order to determine the use of HTLT and the factors contributing to its ongoing use within workplaces, WHSQ surveyed industry stakeholders. The objectives being:

1. Improving WHSQ's evidence base on the prevalence, beliefs and drivers that result in the continued use of 'how to lift' types of training programs for HMTs.
2. Informing WHSQ strategies to assist stakeholders to pursue more effective approaches to managing the risks arising from HMTs.

For the purpose of the survey, HTLT programs were defined as programs that typically train workers in lifting techniques such as bending the knees, keeping a straight back, using a power stance and /or focus on core strengthening and abdominal bracing and/or include exercises for warming up or stretching.

The specific aims of WHSQ in conducting the survey were to:

- Understand industry stakeholder knowledge, beliefs, and practices on conducting HTLT in workplaces
- Determine whether stakeholders know that such training, as defined in the survey, is not evidence-based
- Understand the key drivers for providing HTLT style training in workplaces
- Identify associations between demographic, knowledge, beliefs, and behaviour characteristics of respondents
- Elicit what else industry is doing to manage MSD risks from hazardous manual tasks
- Establish any associations for stakeholder behaviour and preferences for learning and gathering information about managing HMT.

Method

Study design

A 42-question questionnaire was delivered using an online platform. The 'How to Lift' Training survey (HTLT) (Appendix 1) included:

- 32 quantitative Likert and multiple-choice items. A third of these Likert questions included an option to select 'other' and provide a free text response.
- 10 qualitative questions asking respondents for free text comments.

The anonymous questionnaire was structured with a common block of seven initial questions to be answered by all respondents. The questions were then divided into 3 stakeholder branches with the remaining questions being separate blocks of questions stratified for:

- I. employers
- II. workers
- III. WHS providers and those selecting 'other' roles. (Referred to as 'providers' for the remainder of the report)

The questionnaire was designed internally by WHSQ. Co-design of content was confined to other workplace health and safety regulators to avoid potential bias in external stakeholder responses. The survey was piloted by WorkSafe NSW with a group of 30 new inspectors with recent experience in workplace-based work health and safety (WHS) roles. The How to Lift Training survey (HTLT) was distributed to industry stakeholders during July and August 2020.

Study population

The main study population were stakeholders in WHS in Queensland. The primary study population targeted employers and providers of WHS services to workplaces and, to a lesser extent, workers. The questionnaire was distributed to employers, unions, and WHS provider, as well as Return to Work (RTW) and treatment provider professional associations. WHSQ, WorkCover Queensland and the Workers Compensation Regulator Queensland databases, safety network groups and newsletter communications were used. The questionnaire reached a population that were more likely to be engaged with WHS given they were subscribed to relevant forums and other information sources. The questionnaire was also promoted on the WHSQ website home page, Facebook, and LinkedIn social media accounts encouraging the general public to participate with an incentive of a wireless speaker prize draw. NSW and South Australian WHS regulators emailed the questionnaire to contacts in their databases.

Data collection

The online questionnaire was developed internally by WHSQ. The questionnaire was structured with seven initial questions for all respondents. Following the initial questions, the questionnaire was then divided into three stakeholder branches for employer, workers and WHS providers/others. Questionnaire measures covered basic demographic data: state, sector, organisation size, WHS education level. Other questions included beliefs and knowledge of HTLT, use of HTLT, activities used to manage HMT, access to information, and messaging preferences and information gathering practices (See Appendix 1).

Data analysis

Quantitative statistical analysis was conducted using the chi-squared test of independence to identify relationship between demographics, HTLT, beliefs and attitudes, and risk management practices. Results are presented in tables with frequencies and proportions where appropriate. Logistic regression was conducted to assess associations between identified variables and use of HTLT to determine what factors influence the use of HTLT.

Open text responses were analysed using an inductive content analysis approach, to systematically determine the underlying meaning of the responses (Schreier, 2012; Mayring, 2000; Cho & Lee, 2014). Inductive content analysis 'provides knowledge and understanding of the phenomenon under study' (Downe-Wamboldt, 1992, p. 31) and was used as a method to understand key drivers in why HTLT remains highly prevalent, understand the beliefs and practices underpinning the prevalence. This approach is driven by the data – each open text answer is reviewed and categorised. Sub-categories were then aggregated to enable themes to be captured that reflect overall patterns from the data which emerged.

Open text 'other' options in the multiple-choice questions were coded according to the stem options within each question (drop down selection of pre-determined categories) and where appropriate, additional categories were created.

Illustrative quotes are provided where relevant and attributed to industry sectors abbreviated as follows: Agriculture, forestry, and fishing (AFF); Construction (Con.); Education and training (Ed.); Health care & social assistance (HCS); Manufacturing (Man.); Mining (Min.); Public administration (PA); Transport, postal and warehousing (TPW); Wholesale Trade (WT).

The term Higher Order Controls (HOC) was derived to theme and categorise participants' free text responses to the question "Please describe what you are doing to manage hazardous manual task risks". HOC classifications were defined as elimination or mitigation controls and responses categorised into No/Yes/Unclear. Further detail was then explored by categorising the responses and providing quotes to illustrate the respondents' views within each category.

The use of HTLT by the three groups was first considered by their answer to a question on Q34* (workers), Q38* (employers), and Q12* (providers). Workers and employers were asked about the provision of HTLT ('Have you arranged (or provided/received) information and instruction (video, eLearning, group training) where workers are trained in "How to lift" techniques, such as 'bending the knees', 'keeping a straight (neutral) back', and 'core strengthening' (e.g. 'abdominal brace') in the last two years. Providers were asked whether they or their organisation delivered HTLT. In cases where providers did not answer Q12* but answered subsequent questions, their answer to Q7* (You said earlier that you disagreed or are unsure about whether 'How to lift' training is an effective way of reducing injuries - Do you provide 'How to lift' training), if answered, was substituted.

In analyses focusing on higher order controls, employers were considered to be 'HTLT only' when they used HTLT and clearly indicated no higher order control in their free text response. They were considered 'HTLT and HOC' when they indicated a higher order control within their free text response and answered yes to the HTLT question. To be considered 'HOC only' an employer must have indicated a higher order control within their free text response and answered no to the HTLT question. The association between employer views on HTLT effectiveness and legislation the use of higher order controls was explored.

Results

The results are presented to address the key objectives and aims of the survey. All respondent results are outlined below firstly, followed by detailed analysis of each of the major stakeholder groups that include, employers, providers, and workers.

A total of 1930 responses were received, 119 were removed as they were incomplete, leaving 1811 usable questionnaire responses, 1271 (70%) employers, 204 (11%) workers, 314 (17%) providers or other (see Table 1). Most respondents were in QLD (76%) with NSW the second largest group of respondents by state (14%) (see Table 2). In relation to sector, most responses were received from Construction (19%), followed by Health care & social assistance services (14%), Manufacturing (12%), then Education and Training (10.5%) (see Table 3).

Table 1 Responses by role

Role	n	%
Employers	1271	70.2
Other	78	4.3
Providers	236	13.0
Regulators	22	1.2
Workers	204	11.3
Total	1811	100.0

Table 2 Responses by state

Respondent by State	n	%
ACT	5	.3
NSW	254	14.0
NT	4	.2
QLD	1378	76.1
SA	84	4.6
TAS	5	.3
VIC	49	2.7
WA	32	1.8
Total	1811	100.0

Table 3 Responses by sector

Sector*	n	%
Agriculture, forestry, and fishing	80	4.4
Construction	336	18.6
Education and training	190	10.5
Healthcare and social assistance	257	14.2
Manufacturing	217	12.0
Mining	87	4.8
Public administration	170	9.4
Transport, postal and warehousing	104	5.7

*Note: Small sectors omitted.

Prevalence of use of How to Lift training

Respondents were asked about their use of HTLT in their organisations in the last two years (employers or workers) or if they provide HTLT services (providers). Table 4 outlines the responses overall by state, role and sector. Across all states, approximately 75% of respondents were using HTLT. In relation to role, almost 80% of employers reported they were using how to lift training. For providers, 61% reported they were using HTLT, whilst workers were only slightly more likely to report receiving HTLT (62%). Across different industry sectors, the pattern of those using HTLT training as a strategy to prevent MSDs ranged from 69% in Education to 83% in Manufacturing. In summary, HTLT remains widely used in organisations.

Table 4 How to Lift Training Prevalence among Employers, Providers and Workers

	No 'How to Lift' n (%)	'How to Lift' n (%)
State		
QLD	305 (25.3%)	902 (74.7%)
NSW	53 (24.5%)	163 (75.5%)
Other	39 (25.3%)	115 (74.7%)
Role		
Employers	251 (21.2%)	935 (78.8%)
Providers	75 (36.9%)	128 (61.3%)
Workers	71 (37.8%)	117 (62.2%)
Sector*		
Agriculture, forestry, and fishing	18 (25.0%)	54 (75.0%)
Construction	79 (26.8%)	216 (73.2%)
Education	52 (31.5%)	113 (68.5%)
Healthcare and social assistance	45 (19.8%)	182 (80.2%)
Manufacturing	34 (17.3%)	162 (82.7%)
Mining	24 (30.0%)	56 (70.0%)
Public Administration	43 (29.1%)	105 (70.9%)
Transport, postal, and warehousing	16 (17.8%)	74 (82.2%)

*small sectors removed

Beliefs around how to lift training

Respondents were asked questions on their beliefs about HTLT (see Table 5). Over half of all respondents believe that HTLT is an effective strategy for reducing injuries. Over 85% of respondents consider it is necessary to include HTLT training as part of a strain and sprain prevention program, whilst over 75% of respondents believe it is a requirement to use HTLT training to meet WHS legislative requirements.

Table 5 Beliefs on the use of How to Lift Training (all respondents)

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
How to lift training by itself is an effective way of reducing injury? (n=1811)	18.5%	14.9%	8.6%	34.4%	23.6%
How to lift training is a necessary part of programs which aim to prevent strain and sprain injury? (n= 1811)	3.5%	4.4%	4.4%	34.8%	53.0%
How to lift training is necessary under WHS legislation? (n=1811)	5.8%	4.8%	11.0%	31.5%	46.9%

The following tables (Table 6, Table 7, Table 8) break down the three questions of beliefs about HTLT training by sector.

Table 6 Beliefs about HTLT by sector: How to lift training by itself is an effective way of reducing injury

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Agriculture, forestry, and fishing (n=80)	16.3%	21.3%	7.5%	37.5%	17.5%
Construction (n=335)	11.6%	14.3%	9.0%	36.7%	28.4%
Education and training (n=189)	10.1%	13.8%	10.6%	34.4%	31.2%
Healthcare and social assistance (n=257)	28.4%	16.3%	6.6%	29.2%	19.5%
Manufacturing (n=217)	17.1%	18.4%	9.7%	35.5%	19.4%
Mining (n=87)	21.8%	19.5%	6.9%	35.6%	16.1%
Public administration and safety (n=169)	26.0%	14.2%	7.1%	33.7%	18.9%
Transport, postal and warehousing (n=104)	22.1%	10.6%	11.5%	32.7%	23.1%

Table 7 Beliefs about HTLT by sector: How to lift training is a necessary part of programs which aim to prevent strain and sprain injury

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Agriculture, forestry, and fishing (n=80)	0.0%	0.0%	3.8%	45.0%	51.2%
Construction (n=335)	3.0%	3.9%	4.8%	32.5%	55.8%
Education and training (n=189)	1.6%	1.6%	3.7%	33.7%	59.5%
Healthcare and social assistance (n=257)	5.8%	4.7%	7.0%	32.7%	49.8%
Manufacturing (n=217)	1.8%	6.0%	3.7%	41.0%	47.5%
Mining (n=87)	4.6%	5.7%	3.4%	42.5%	43.7%
Public administration and safety (n=169)	5.9%	7.1%	4.1%	36.5%	46.5%
Transport, postal and warehousing (n=104)	4.9%	2.9%	3.9%	36.9%	51.5%

Table 8 Beliefs about HTLT by sector: How to lift training is necessary under WHS legislation

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Agriculture, forestry, and fishing (n=80)	3.9%	3.9%	15.6%	37.7%	39.0%
Construction (n=335)	3.3%	5.8%	9.1%	34.2%	47.6%
Education and training (n=189)	4.3%	2.2%	10.3%	30.3%	53.0%
Healthcare and social assistance (n=257)	4.8%	6.5%	10.9%	24.6%	53.2%
Manufacturing (n=217)	3.7%	5.6%	14.5%	30.4%	45.8%
Mining (n=87)	9.6%	9.6%	8.4%	34.9%	37.3%
Public administration and safety (n=169)	9.6%	6.0%	15.7%	31.3%	37.3%
Transport, postal and warehousing (n=104)	8.1%	1.0%	7.1%	41.4%	42.4%

The following sections focus on the three respondent groups, employers, providers and workers separately.

Employers

How to lift training remains widely used by employers with over 78% reporting they used HTLT by itself or in combination with other strategies (Table 9). Larger organisations were more likely to use HTLT than smaller organisations ($\chi^2= 46.84, p<0.001$) (Table 10). In organisations using HTLT, those with a diploma level as the highest occupational health and safety (OHS) qualification level were overrepresented ($\chi^2= 36.6, p<0.001$) (Table 11). Over 90% of employers believe HTLT is a necessary part of sprain and strain prevention program – citing general practice in their industry (43.4%), to meet legal obligations (36.3%), and recommendations by providers (23.5%).

Table 9 How pervasive is the use of HTLT?

Employer use of HTLT	N	%
No HTLT	251	21.2%
Provide HTLT	935	78.8%
Total	1207	

Table 10 Number of employees in the business

	No HTLT		Provide Any HTLT	
1-4 employees	14	5.9%	29	3.3%
5-19 employees	57	24.1%	84	9.4%
20-199 employees	90	38.0%	354	39.8%
200+ employees	71	30.0%	408	45.8%
Non-employing (sole trader)	5	2.1%	15	1.7%

Table 11 Highest OHS qualification in the workplace

	No HTLT		Provide Any HTLT	
Post graduate degree	38	17.0%	161	18.4%
Bachelor's degree	34	15.2%	129	14.7%
Graduate diploma	8	3.6%	51	5.8%
Graduate certificate	4	1.8%	15	1.7%
Diploma	30	13.4%	217	24.7%
Certificate IV	50	22.3%	178	20.3%
5-day course	13	5.8%	40	4.6%
Short course	16	7.1%	44	5.0%
None	31	13.8%	42	4.8%

Regardless of whether employers had used HTLT or not , around 60% believed it was effective.

Table 12 Belief: How to lift training by itself is an effective way of reducing injury – all employer responses

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Employers (n=1271)	14.4%	15.1%	9.1%	36.8%	24.5%

Table 13 Belief: How to lift training by itself is an effective way of reducing injury – employers who do and do not conduct HTLT

Use HTLT	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
No (n=249)	17.3%	12.4%	9.6%	38.2%	22.5%
Yes (n=934)	13.5%	15.4%	8.9%	36.9%	25.3%

The results from 921 employers who had conducted HTLT in the past two years show that nearly a quarter believe that the HTLT they provided was definitely effective with a further 45% agreeing that it was probably effective (Table 14):

Table 14 Employer beliefs in the effectiveness of training by HTLT delivery

Use HTLT	Definitely not	Probably not	Unsure	Probably yes	Definitely yes
N/A(not asked)	n/a	n/a	n/a	n/a	n/a
Yes (n=921)	1.4%	8.9%	21.2%	44.6%	23.9%

Table 15 categorises the responses of employers who provided comments on how they have been able to tell the training that they had provided was or was not effective. The responses fell into four key themes: impact on incident/injury frequency; observing workers' actions and feedback; workers risk awareness /assessing task risks and respondents being unable to determine if it has been effective. The majority of responses centred on the use of injury data to determine effectiveness and 10% of the sample reported the effectiveness was dependent on the quality/quantity/frequency of training or that they had not measured outcomes. Table 16 provides illustrative quotes for each sub theme.

Table 15 Employers who have provided HTLT and indicators of effectiveness

Theme/sub theme	N (645)	%
Injury Data		
Incident/injury reduction	227	35.2%
No MH injuries	86	13.3%
Static injury rate	68	10.5%
Rate of incidents/injuries/claims	32	5.0%
Worker Observations		
Workers ARE compliant with lifting protocol	45	7.0%
Workers NOT compliant with lifting protocol	44	6.8%
Workers trained and aware	21	3.3%
Worker feedback	13	2.0%
Workers engaged/improved safety culture	11	1.7%
Positive worker feedback	6	0.9%
Stretching program continues	4	0.6%
Risk awareness		
Risk assessments conducted/controls implemented / worker assess as too hazardous	22	3.4%
Unsure of effectiveness		
Training unsuitable, ineffective or unreliable	38	5.9%
Unable to determine	28	4.3%

Table 16 Employer’s report of HLT training effectiveness/ineffectiveness: Illustrative quotes

Category/sub-category	Illustrative quotes
Injury Data	
Incident/injury reduction	Minimal injuries to our staff Muscle strain injuries and incidents have decreased within the business Our injury rates have reduced greatly.
No MH injuries	No recorded workplace Incidents in the last twelve months the absence of injuries No new injuries from this type of work have been reported.
Injury rate remains the same /Static injury rate	Continued injuries regardless of training provided Our workers are still being injured, the goods we lift are not all the same (some quite awkward) The injuries still occur.....the whole cumulative effect starts coming into play as we have an ageing and long serving workforce. Hazardous manual task injuries continue to be approximately 60% of our total injuries.
Rate of incidents/injuries/claims	Reviewing incidents and workers compensation claims Number (of) injuries that are still be sustained Assurance program and Data analytics.
Worker Observations	
Workers ARE compliant with lifting protocol	The majority of employees do follow correct techniques - time, location of equipment and staffing have an impact on manual handling tasks Workers following the training and no injuries present Observing correct techniques, less back strain injuries
Workers NOT compliant with lifting protocol	Training has provided awareness for workers, however poor planning or identification of stop points often results in workers being complacent of correct lifting techniques The majority of Manual Handling injuries have been caused by Workers not following documented SWP training and Supervisors and Leading hands not watching /or reporting non-compliance with SWP so that further refresher training can be provided The training has been rolled out but people forget the training quickly and revert to old habits.
Workers trained and aware	It has made staff aware of the ongoing issues that can occur if correct manual handling techniques are not used. We have little to no physical injuries due to manual handling training Employees demonstrated awareness It makes the support workers (1) more conscious of risks, (2) better prepared.
Worker feedback	Engagement by workers - feedback Feedback Feedback / hazard reporting has been minimal.
Workers engaged/improved safety culture	There have been improvements but culturally there are still further improvements needed Language used by employees and individuals assessing loads/some manual tasks Changes in Workers Attitudes towards Manual Handling tasks.

Category/sub-category	Illustrative quotes
Positive worker feedback	Positive feedback from staff. Better work attitude
	Positive feedback, no injuries, safety observations
	Workers have indicated that it has been beneficial. We are still determining the true effect of this through our claims data.
Stretching program continues	Personnel love doing morning stretches and carry it on during work time
	Small percentage of workforce continue to do warm up stretches
	Stretches are completed every morning at pre starts and muscle strain injuries are a minimum.
Risk awareness	
	We consult with our workers and they are aware of the correct practices and inform us when a task is unable to be performed safely
	Worker assessment of risk awareness
	Workers take into consideration the implications of not lifting correctly. Workers also consider a risk assessment of the task before undertaking it.
	Increased worker awareness of at-risk tasks and ongoing feedback from workers of tasks that require review
	The training enabled us to identify at risk tasks that we are working to both engineer out and build better lifting habits for. We have been able to sustain practices that reinforce good manual handling habits.
Unsure of effectiveness	
Training unsuitable, ineffective or unreliable	Dependant on how or who has provided the information and or training.
	Incidents dropped off for the first few months after training . . . but then started to increase back to "normal" levels
	It misses vital topics that should be discussed and identified to staff.
Employer Unable to determine	It's hard to tell because it's preventative
	Maybe, due to few reported cases of manual handling injuries. There are a range of factors that lead to reduced injuries, with training being just one. We have seen a long- term reduction in manual handling injuries (frequency and severity), but it is not possible to say how big a factor training was, just that it was likely a factor.

Employers who reported conducting HTLT even though they believed it to be ineffective listed a range of reasons on why they continue to use it (Q8 in questionnaire). These are outlined below in Table 17. The most frequent reasons given by respondents was that it was general practice (54%) or they felt it necessary to meet WHS legislative obligations (45%). Twenty percent (20%) of responses indicated that HTLT was a component of the overall manual task risk management approach and 11% reporting it was necessary for accreditation.

Table 17 Why are employers who believe HTLT is not effective still using it?

	N (310)	%
General practice in my industry	166	53.5%
To meet legal obligations	139	44.8%
Senior leaders like it or expect it	80	25.8%
Workers like it/expect it	67	21.6%
One component of safety/MH strategy	62	20.0%
Was recommended by provider	60	19.4%
It is easily rolled out	56	18.1%
As part of an accreditation program	34	11.0%
Staffing, time or other resources issues with other approaches	27	8.7%
Lack of senior management support for other approaches	21	6.8%
There is nothing else available	19	6.1%
Risk management/injury prevention	6	1.9%
MH core component of job/ unable to be designed out	6	1.9%

*Multiple response options so numbers are greater than n=310

A sample of quotes from employers using HTLT, even though they consider it ineffective include:

- *As part of a broader risk management program which includes participative ergonomics, training is provided where there remains a residual risk (Transport, postal and warehousing)*
- *As part of a comprehensive suite of controls including identification of manual tasks, and planning ways to reduce the risks involved. Never just by itself as a control (Public Administration)*
- *"By itself" it is ineffective. It needs to be part of a broader approach to reducing the risk of musculoskeletal injuries (Manufacturing)*
- *A perception that it is necessary from an accreditation or compliance perspective (Construction).*

Table 18 results show that just over 90% of employers believe that HTLT is a necessary part of a program to prevent strain and sprain injury.

Table 18 Employer belief: How to lift training is a necessary part of programs which aim to prevent strain and sprain injury

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Employers (n=1271)	2.0%	3.1%	3.9%	36.4%	54.5%

Table 19 outlines the responses regarding employer beliefs around why they think HTLT is a necessary part of programs which aim to prevent strain and sprain injury. Due to many respondents providing essentially the same responses in the free text 'other – please describe' option as contained in the

multiple-choice stem question, these responses were added into the original stem response categories. Most respondents thought HTLT was necessary as part of a program to prevent strain and sprain injuries as it was general practice in their industry; they believed it met legal obligations and was necessary for accreditation and was recommended by a provider. Employer comments illustrate a range of views from those who consider HTLT is important in order to ensure that workers have ‘safe practices’ to prevent injury. Comments also reflected employers who preserve HTLT in their programs for the manual tasks where higher order controls have not yet been implemented. Illustrative comments appear below the table.

Table 19 Why employers believe HTLT is a necessary part of programs which aim to prevent strain and sprain injury

	N=1001	%
General practice in my industry	434	43.4
To meet legal obligations	363	36.3
Was recommended by a provider	235	23.5
It is easily rolled out	215	21.5
Workers like/expect it	208	20.8
Senior leaders like it or expect it	183	18.3
As a part of an accreditation program	92	9.2
Staffing, time or other resource issues with other approaches	46	4.6
Lack of senior management support for other approaches	34	3.4
Other – please describe:		
Ensure workers use correct techniques	81	6.4
Risk management/injury prevention	63	5
One component of safety/MH strategy	47	3.7
Part of induction/refresher	20	1.6
Promote safety culture	12	0.9
Duty of care/legal compliance	10	0.8
Legal obligation	7	0.6
Essential as limited budget for mechanisation	1	0.1

*Respondents can provide multiple responses

Examples of respondent quotes for themes in ‘other – please describe’ categories in Table 19 include:

- *Having staff trained in how to correctly lift and safely move an object is important to reduce the risk of injuries occurring from manual handling. Training is an important part of mitigation. Face to face, demonstrative training is best (Public Administration)*
- *Because it's effective for workers to have body awareness and stabilisation if they are lifting at work to prevent injuries (Education)*
- *We have developed this program because we have a large amount of manual handling. all of our new starters get this training when they commence, and we train them on their individual jobs with what is expected in terms of manual handling (Manufacturing.)*

- *We deliver a successful Manual Tasks Training System... (MTLFs). Safe patient handling programs like this have been shown to improve patient outcomes in addition to positively affecting the health and wellbeing of staff..... The MTLF program is helping to deliver significant cost savings through reducing the number and severity of musculoskeletal injuries (MSI)...(and) enables us to meet legislative and accreditation requirements for manual tasks training and induction (Health care & social assistance)*
- *Engineering controls cannot always be introduced in many lifting situations and manual handling is still necessary in the workplace and day to day life. Correct lifting techniques and training will therefore always remain necessary (Manufacturing).*

Table 20 indicates that 81% of employers believe that HTLT is necessary under WHS legislation.

Table 20 Employer belief: How to lift training is necessary under WHS legislation

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Employers	3.9%	4.5%	10.7%	33.7%	47.2%

Employers who believe HTLT is not effective but conduct HTLT anyway provided open text responses on legislation, including:

- *Common law defence (Transport)*
- *It is a key/core induction objective and must completed under the current 2011 act. (Wholesale).*
- *Senior management see this as ticking the box for compliance (Public Admin).*

Employers who thought that HTLT was a necessary part of strain and sprain injury prevention programs provided open text responses on legislation, including:

- *Assists in reducing manual handling claims, we set lifting limits and train them in correct lifting. Showing we have completed this training will reduce any common law claims against us for human error or incorrect lifting techniques where an injury was sustained (Manufacturing)*
- *Instruction and training forms part of the WHS Regulation 2017 (* 2011) (Construction)*
- *Helps fulfil employers' obligations to ensure and maintain safe workplace and duty of care to their staff (Health and social assistance).*

Illustrative quotations from the questionnaire’s final, summary question: “Do you have anything else to add?” suggest some confusion and conflict between WHS legislation and workers compensation issues:

- *I get that the research around "manual handling training" is weak (Ergonomists carry on about it all the time), however, for both litigation and WHS regulation we need to prove we have managed the risk so far as is reasonably practicable and the best form to prove that is evidence of training (HealthCare)*
- *Research demonstrates manual handling training is ineffective, worksafe website identifies training is ineffective, yet there is a conflict in workers compensation common law requiring training to protect against claims (Education and Training)*
- *Please explain the risks of manual handling lifting training to industry – example cited was a QCA decision /legal case cited: worker shoulder injury foreseeable: work systems, pace and layout; employer relied on training – damages awarded to worker on appeal (Construction)*
- *The emphasis on a simple training solution is based on common law experience with lawyers & judges asking for training without questioning the effectiveness. In practice engineering solutions are making life safer but also there is anecdotal evidence that it is also making the workforce less fit. Research findings into this would be good (Manufacturing).*

Use of higher order controls in risk management

Employers were asked the question “are you doing things other than training at your workplace to manage your risks from hazard manual tasks?”. Responses were coded as previously described and then grouped according to whether they were using higher order controls (Elimination, Mitigation) or other approaches (such as lower order administrative controls or training), or type of control was unclear. More employers reported using higher order controls in comparison to lower order controls and training (Table 21). However, 17% of respondents did not provide responses that could be coded as controls and 11.5% of respondents were using neither HOC nor HTLT. Appendix 2 has further details on HTLT and Higher order controls among employers by state, sector, business size, information sources and training.

Table 21 The use of higher order controls

	n	%
No HOC nor HTLT	126	11.5
Only HTLT	281	25.6
Yes, using HOC	501	45.7
Unclear if HOC	189	17.2
Total	1091	

*Includes responses to Q44 and 45 of the original survey, so people only doing HTLT are included in these figures

Examination of the data collected in Q45 asking what risk management strategies are used to manage HMT apart from HTLT, found 54% of employers used a mitigation approach (Level 2) rather than elimination of risk (Level 1) and this was mostly achieved with the use of lifting equipment (see Table 22). The use of manual handling equipment to manage the risk is demonstrated by these representative quotes from the employers:

- *Engineering controls. Use of mechanical lifting and carrying devices e.g., trolleys, pallet jacks, forklifts, rigging.*
- *Lifting aids such as forklifts, duct lifters, mobile cranes etc used to minimise hazardous manual task risks.*
- *We provide mechanical aids such as trolleys. We provide a forklift and mobile picking platform We also utilise a freight hoist. We also ensure that workers are rotated to ensure that they do not do a lot of repetitive work.*

The use of ‘other approaches’ was reported by 21% of the sample with commentary such as:

- *Provide procedures on how to perform these tasks and training when required.*
- *Rotate workers, change job to different task.*
- *SWMS statements, toolboxes and regular inductions with a variety of clients which reinforce the standard practices.*

The category ‘risk management process’ was separated from the HOC descriptors, as a reported use of risk management process does not describe an outcome with tangible changes to practice and so may fall into either Level 1, 2 or Level 3 of the hierarchy of control. Nineteen percent of the sample responded in this category. Representative quotes of this response group include:

We are in the process of introducing PERFORM (Participative Ergonomics for Manual Tasks)

Completing risk assessments and placing action plan in place

Group discussions and inclusion into Risk assessment paperwork

Table 22 Risk management strategies to manage hazardous manual task risks (other than HTLT)

	HOC	n	%
Level 1 Elimination	Yes	29	3.3
Level 2 Mitigation (Substitution, Isolation, Engineering solutions)	Yes	472	53.8

Other approaches-Administration (Task rotation, Observations, SWMS) and /or training, Undertake risk management process	No	186	21.0
HTLT	Unclear	169	19.1
Corporate Wellness program	No	7	0.8
Unclear	Unclear	2	0.2
		20	2.3

*Only those who responded to Q45 in the questionnaire, that is the risk management activities in addition to or other than HTLT

The manufacturing sector reported a higher proportion of respondents using HOC compared to not using HOC. In contrast, the education sector had a higher proportion of respondents not using HOC compared to using HOC. Large organisations were more commonly using HOC than not (45.7% vs 30.5%, $p < 0.001$), as were businesses with a national or state WHS manager (41.9% vs 26.3%, $P < 0.001$). In a multiple option question regarding source of Manual Tasks Information, respondents using HOC were more commonly finding their information from professional associations ($p < 0.001$), WHS associations ($p < 0.001$) and Journals/Industry publications ($p = 0.012$).

State, sector, business size were not strong differentiators of those who are using just HTLT, HTLT plus HOC or just HOC. In relation to messaging, those that preferred industry associations and events were using both HTLT and HOC (32.5%, $p = 0.028$ and 23%, $p = 0.003$, respectively).

Is there a link between employer HTLT belief and the use of HOC?

To further explore the relationship between employer beliefs about HTLT and their use of this type of training, a cross tabulation of employer beliefs about HTLT effectiveness and use of HTLT and HOC was undertaken. The findings are outlined in Table 23. Sixty eight percent of those using HTLT agree that it is an effective way of reducing injury. This level of agreement is consistent for those employers using both HTLT and HOC (68%). Fifty percent of those using HOC only agree that HTLT by itself an effective way of reducing injury, with 44% disagreeing and 16% undecided.

Table 23 Association between employer belief of HTLT effectiveness and use of HOC

HMT Control level	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
HTLT training (n=281)	8.2%	13.9%	9.3%	34.6%	33.9%
HTLT and HOC (n=419)	15.8%	17.7%	8.4%	38.4%	19.8%
HOC only (n=82)	18.3%	15.9%	15.9%	26.8%	23.2%

The factors that support HTLT ongoing delivery by employers

In models containing all relevant factors (covariates), the factors which influence employer decisions about the provision of HTLT are:

- when the highest OHS qualification is reported as a Diploma (OR: 3.10 95%CI:1.6-6.0, p=0.001) or short course (OR: 2.48, 95%CI:1.08-5.69, p=0.033).
- Large businesses with 200+ employees had 3 times the odds of offering HTLT compared to smaller businesses (OR: 3.0, 95%CI:1.38-6.67, p=0.006).
- Stronger beliefs that HTLT is a legislative requirement increased the odds of an employer offering HTLT (OR:1.37 95%CI:1.16-1.62 per increase in level e.g., ‘Somewhat agree’ to ‘Strongly agree’, p<0.001).

Beliefs that HTLT by itself is an effective way of reducing injury (OR:1.02 95%CI:0.88-1.17, p=0.824) or that HTLT is a necessary part of programs which prevent strain and sprain injury (OR:1.19 95%CI:0.96-1.48, p=0.118) were not significant factors supporting its ongoing delivery.

Providers

Over 80% of providers reported they were supplying services to an organisation in relation to manual tasks/manual handling, and just over 60% provided HTLT as part of that service (Table 24). However, approximately 74% also provided advice on alternative approaches to HTLT. Respondents who indicated they had the background of an ergonomist were least likely to provide HTLT (p<0.001) (Table 26). There was no difference in the provision of HTLT in relation to the providers highest qualification level ($\chi^2= 4.07$, p=0.667) (Table 27). Having hazardous manual task legislation as a component of their course did not affect providers delivery of HTLT (p=0.472), nor their belief it is a legislative requirement (p=0.239) (see Table 28).

Table 24 How pervasive is the use of HTLT?

Provider use of HTLT	No	Yes
Do you provide services at workplaces in the area of manual tasks/ manual handling?	41 (18.4%)	182 (81.6%)
Do you/your organisation deliver HTLT?	75 (36.9%)	128 (61.3%)
Do you/your organisation provide advice on alternatives to HTLT?	44 (25.7%)	127 (74.3%)

Over a third of providers think HTLT by itself is an effective way of reducing injury, nearly 70% of providers think HTLT is a necessary part of strain and strain injury prevention programs, and just on 60% of providers think HTLT is necessary under WHS legislation (Table 25).

Table 25 Provider beliefs on the use of HTLT

How to lift training by itself is an effective way of reducing injury

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Providers (n=236)	39.4%	16.9%	8.9%	21.6%	13.1%

How to lift training is a necessary part of programs which aim to prevent strain and sprain injury

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Providers (n=236)	11.9%	11.4%	7.2%	33.9%	35.6%

How to lift training is necessary under WHS legislation

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Providers (n=236)	16.2%	8.8%	15.4%	28.1%	31.6%

Table 26 What is your professional background?

	Total (n=200)		No HTLT		HTLT		<i>p</i>
Engineer	12	6.00%	5	6.7%	6	4.7%	0.548
Ergonomist	18	9.00%	14	24.1%	4	3.4%	<0.001
Exercise physiologist	16	8.00%	4	6.9%	11	9.3%	0.588
Health & safety professional	61	30.50%	22	37.9%	38	32.2%	0.451
Nurse	3	1.50%	1	1.7%	2	1.7%	a
Occupational Therapist	25	12.50%	9	15.5%	16	13.6%	0.727
Physiotherapist	35	17.50%	10	17.2%	25	21.2%	0.538
Other	21	10.50%	9	15.5%	12	10.2%	0.218
Tradesperson	4	2.00%	2	18.2%	2	13.3%	a
Manager	4	2.00%	1	9.1%	3	20.0%	a
Trainer	7	3.50%	1	9.1%	6	40.0%	a

*Multiple response option available. Note: Due to questionnaire design (see methodology section) not all providers could be assigned to either HTLT or no HTLT. a. Minimum expected cell count less than 1.

Table 27 Highest formal OHS qualification obtained

	Total (n=190)		No HTLT		Any HTLT	
Post graduate degree	56	23.7%	24	34.3%	28	27.7%
Bachelor's degree	38	16.1%	17	24.3%	19	18.8%
Graduate diploma	19	8.1%	7	10.0%	9	8.9%
Graduate certificate	8	3.4%	2	2.9%	4	4.0%
Diploma	21	8.9%	8	11.4%	11	10.9%
Certificate IV	21	8.9%	6	8.6%	14	13.9%
None / Professional Development / 1 day course	27	11.4%	6	8.6%	16	15.8%

* Note: Due to questionnaire design (see methodology section) not all providers could be assigned to either HTLT or no HTLT.

Table 28 Was hazardous manual task legislation a component of your course?

	No HTLT		HTLT	
No (n=72)	31	44.9%	41	39.4%
Yes (n=101)	38	55.1%	63	60.6%
	Do not believe HTLT to be a legislative requirement		Believe HTLT to be a legislative requirement	
No (n=77)	38	45.2%	39	36.8%
Yes (n=113)	46	54.8%	67	63.2%

* Note: Due to questionnaire design (see methodology section) not all providers could be assigned to either HTLT or no HTLT.

In relation to the services required of providers (see Table 29) the most commonly requested service was risk management services (58%). However, the next most commonly requested service was HTLT, at 41%.

Table 29 Top three services requested of providers

	n=236	
Risk management identification, assessment & control	137	58.3%
How to Lift technique training	96	40.9%
Ergonomic assessments	85	36.2%
Conducting risk assessments	81	34.5%
Participative ergonomics	54	23.0%
Developing controls	48	20.4%
Stretching sessions	26	11.1%
Design of engineering solutions	24	10.2%

*Multiple response option available. Respondents could select up to three responses.

Table 30 outlines responses from providers who believe HTLT is a necessary part of a preventing strain and sprain injury program. The top three reasons cited for why they think it is necessary, were: it is general practice in my industry, to meet legal obligations, and was recommended by a provider (Physiotherapist/occupational therapist/exercise physiologist or health and safety consultant or other consultant or advisor).

Table 30 Provider reasons for holding the belief that HTLT is a necessary part of a program to prevent sprain and strain injury

	N=136	%
General practice in my industry	45	33.09%
To meet legal obligations	41	30.15%
Was recommended by a provider	29	21.32%
It is easily rolled out	28	20.59%
Workers like/expect it	27	19.85%
Senior leaders like it or expect it	24	17.65%
As a part of an accreditation program	11	8.09%
Lack of senior management support for other approaches	10	7.35%
Staffing, time or other resource issues with other approaches	9	6.62%
Other:		
Ensure workers use correct techniques	21	15.44%
One component of safety/MH strategy	17	12.50%
Risk management/injury prevention	10	7.35%
Part of induction/refresher	3	2.21%
Promote safety culture	2	1.47%
Essential as limited budget for mechanisation	1	0.74%

*Respondents can provide multiple responses

Table 31 reports the reasons why providers who believe HTLT is not effective but still provide it as a service to workplaces. The top three reasons are that senior leaders request it, it is general practice in my industry, and to meet legal obligations.

Table 31 Why are providers who believe HTLT is not effective still providing it to workplaces?

	N (80)	%
Senior leaders like it or expect it	32	40.00%
General practice in my industry	30	37.50%
To meet legal obligations	29	36.25%
One component of safety/MH strategy	20	25.00%
Workers like it/expect it	18	22.50%
It is easily rolled out	15	18.75%
Lack of senior management support for other approaches	14	17.50%
As part of an accreditation program	11	13.75%
Was recommended by a provider	9	11.25%
Staffing, time or other resources issues with other approaches	7	8.75%
There is nothing else available	5	6.25%
Promote safety culture/corporate wellness program	2	2.50%

Respondents who indicated they had the background of an ergonomist were least likely to provide HTLT than those with other professional backgrounds ($\chi^2= 4.88, p=0.559$).

Providers who offered HTLT were also asked if they provided advice on alternatives to HTLT and if so what these services were (Q 15). These responses are shown below in Table 32. Despite the question seeking information on alternatives to HTLT, some providers listed HTLT using different terms (for example: *neutral posture, difference between what you can lift and what you can safely lift*).

Table 32 Provider services offered as alternatives to HTLT by providers who also offer HTLT

	n=124
Risk management education	48
Engineering controls	28
Task specific assessment	16
HTLT	13
Participative MT/ MH risk management	12
Individual assessments/training	4
Written procedures	2
Promote safety culture	1

*MT Manual task; MH Manual handling

Providers who responded that they did not provide HTLT were asked what services they provided instead (Q 13). Thirty percent responded that they provided risk management focused services. Eight providers, however, despite the question requesting information on activities that were an alternative to HTLT, listed HTLT using different terminology (for example: *'relaxed lifting'*; *lift within capacity*). These alternate services offered by non-HTLT delivering providers are outlined in Table 33.

Table 33 Provider services for prevention of injuries from manual tasks offered by providers who do not provide HTLT

	n=55
Risk management education	15
Participative MH risk management	14
HTLT	8
Task specific assessment & training	7
Written procedures	5
Engineering controls	5

Factors that support HTLT ongoing delivery by providers

In mutually adjusted models (with all relevant factors included), the strongest influences on whether a provider would deliver HTLT was:

- whether the service was requested of them (OR: 3.88 95%CI: 1.78-8.45, p=0.001).
- Providers who had a stronger belief in HTLT being a necessary part of programs to prevent strain and sprain injuries meant that the provider was more likely to deliver HTLT (OR:1.57 95%CI:1.10-2.25 per increase in level e.g., 'Somewhat agree' to 'Strongly agree'; p=0.014).

Belief in HTLT by itself as an effective way of reducing injury (OR: 0.95 95%CI: 0.69-1.30; p=0.729) or a that HTLT is necessary under WHS legislation (OR: 1.16 95%CI: 0.85-1.57; p=0.353) was not significant. Addition of the state, sector, provider role and education level did not influence the likelihood that they would deliver HTLT.

Workers

Over 60% of the worker group responded that they had participated in HTLT (Table 34). Whether they were receiving HTLT or not, workers strongly believe it to be an effective way of reducing injury (Table 35). For those that had received training approximately 80% believed it had been effective.

Table 34 How pervasive is the use of HTLT?

Workers receiving HTLT	N (188)	%
No HTLT	71	37.8%
HTLT	117	62.2%

Table 35 Worker beliefs about the effectiveness of training

How to lift training by itself is an effective way of reducing injury

Received HTLT	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
No (n=70)	12.9%	14.3%	4.3%	41.4%	27.1%
Yes (n=117)	11.1%	9.4%	6.8%	38.5%	34.2%

Do you believe the instruction /training that you have received has been effective?

Received HTLT	Definitely not	Probably not	Unsure	Probably yes	Definitely yes
No	Not asked				
Yes (n=115)	4.3%	8.7%	6.1%	53.0%	27.8%

Thirteen workers outlined, under 'other content', the type of HTLT they had received where it differed from the survey definition. Other instruction included no lift policy information, general manual handling information and use of lifting equipment.

To further explore worker beliefs about training effectiveness, the responses to Q36 and Q37 were cross matched, while the numbers are too small to draw statistical relationships, it was clear that workers felt that the HTLT improved their awareness and knowledge as well as individual technique. The quality of the training was also highlighted as influencing the effectiveness of the training – in that generic training was not useful. None of the workers were able to link HTLT with changes to the workplace. Representative quotes from workers about HTLT include:

- *Gave me general refresher on how to lift correctly (Education)*
- *Watching videos of people picking up boxes isn't relevant. Most of our injuries are moving with a load, not just the getting it off the ground part (Manufacturing)*
- *We implement manual handling techniques as recommended. There is manual handling sign off sheet in place to ensure it is done properly (Health care & social assistance)*
- *You still have to get the work done. Some stuff is too heavy or awkward to not cause injury if done repeatedly (Manufacturing).*

How stakeholders get information about HMT risk management

Employer's source of information

Employers were asked a range of questions on accessing manual task risk management information and this was mapped against their use of HOCs to explore any patterns between the source of information and use of HOCs. Results are shown in Table 36.

Table 36 Employer's source of manual task risk management information

	All (N=1271)		No HOC (n=407)		Using HOC (n=501)	
	n	%	n	%	n	%
Professional association	248	19.5%	53	13.0%	121	24.2%
Industry associations	326	25.6%	94	23.1%	154	30.7%
WHS associations	442	34.7%	119	29.2%	216	43.1%
WHS regulator website	556	43.7%	182	44.7%	253	50.5%
Internet searches	330	26.0%	94	23.1%	168	33.5%
Workers' comp/ins provider	220	17.3%	71	17.4%	92	18.4%
Consultant	118	9.3%	33	8.1%	57	11.4%
Collaboration with university	18	1.4%	3	0.7%	12	2.4%
Union	48	3.8%	17	4.2%	19	3.8%
Events	225	17.7%	50	12.3%	113	22.6%
Journals, Industry publications	228	17.9%	62	15.2%	109	21.8%
Not up to date with information	37	2.9%	25	6.1%	8	1.6%

*All employers includes those not using HOC (n=407), those using HOC (n=501), those employers whose use of HOC is unclear (n=189) and those respondents who answered Q25 but not Q44 or Q45 (n=174).

Employers who were undertaking manual hazardous task strategies apart from training, were asked where they sourced their information. Again, this data is presented separately by those who are using HOC and those who are not using HOC (Table 37).

For employers as a group, WHS associations and the WHS regulator website were the most common sources of information for managing hazardous manual tasks.

For the next most common sources of information a slightly different pattern emerges for those employers using HOC compared to those who are not using HOC. Employers using HOC are reporting the use of other similar businesses to source information, internet sources and industry associations as the next most common. Employers not using HOC are reporting the use of consultants for information at higher levels than those who are using HOC.

Table 37 Employer’s source of information regarding managing risks from hazardous manual tasks (other than training)

	All (N=931)		No HOC (n=195)		Using HOC (n=501)	
	n	%	n	%	n	%
Other similar businesses	267	28.7%	46	23.6%	169	33.7%
Industry associations	333	35.7%	60	30.8%	190	37.9%
WHS associations	414	44.5%	79	40.5%	225	44.9%
WHS regulator website	439	47.2%	77	39.5%	236	47.1%
Internet searches	361	38.8%	68	34.9%	217	43.3%
Workers’ comp/ins provider	168	18.1%	32	16.4%	87	17.4%
Consultant	234	25.1%	53	27.2%	118	23.6%
Collaboration with university	22	2.4%	4	2.2%	14	2.8%
Other						
Workplace experience	20	2.2%	10	5.1%	6	1.2%
Workplace experience + industry network	1	0.1%	1	0.5%	0	0.0%
Workplace experience + commercial resources	3	0.3%	1	0.5%	1	0.2%
Allied health professional	11	1.2%	2	1.0%	5	1.0%
Already in place	2	0.2%	1	0.5%	1	0.2%
Not for profit resource	1	0.1%	0	0.0%	0	0.0%
Formal education	14	1.5%	2	1.0%	7	1.4%
Code of practice	2	0.2%	1	0.5%	0	0.0%
Workplace consultation	19	2.0%	0	0.0%	16	3.2%
“Common knowledge/common sense”	10	1.1%	2	1.0%	7	1.4%
Corporate resources	34	3.7%	11	5.6%	20	4.0%
Risk assessments	9	1.0%	2	1.0%	7	1.4%
Inc. Internal WHS capacity	1	0.1%	0	0.0%	1	0.2%
Equipment	5	0.5%	0	0.0%	5	1.0%
Suppliers/manufacturers						
Incident Analysis	2	0.2%	0	0.0%	1	0.2%
IPaM	5	0.5%	1	0.5%	4	0.8%
Workplace experience + short courses	4	0.4%	0	0.0%	1	0.2%
Own knowledge	13	1.4%	2	1.0%	7	1.4%
PErforM	1	0.1%	4	2.1%	1	0.2%
RTOs	1	0.1%	0	0.0%	1	0.2%
Standard industry Practice	1	0.1%	0	0.0%	1	0.2%
Subcontractors	1	0.1%	0	0.0%	1	0.2%
Research	1	0.1%	0	0.0%	1	0.2%

*Question only asked to respondents who indicated they are doing things (other than training) at their workplace to manage risks from hazardous manual tasks. All employers include those who answered yes to this question - not using HOC (n=195), those using HOC (n=501), those employers whose use of HOC is unclear (n=189) and those that did not answer Q45. *IPaM - Injury Prevention and Management – a WHSQ workplace assistance program. *PErforM - Participative Ergonomics for Manual tasks - a participative risk management process for hazardous manual tasks. *RTO – Registered training organisation

Preferences for messages from the regulator in relation to HMT risk management

All respondents were asked about how effective they would find types of messages in relation to hazardous manual tasks risk management information. and advised that their answers would assist WHS regulators define the best way to reach their target audiences. Table 38 outlines response by respondent group. On responding to a question about the effectiveness of information, of note was the effectiveness of personal experience (e.g. case studies) for employers and workers (68% very to extremely effective). Workers also judged information about the consequences if risks aren't managed to be very effective to extremely effective more frequently at 63%, than they did for research/ data fact information at 47%.

Table 39 shows the mode in which respondents prefer to get their messaging about manual task risk management. Stronger preferences for messages through video/film and case studies was identified for all roles. Social media was not preferred as a messaging option by all three groups.

Table 38 Perceived effectiveness of types of messages by role

	Not effective	Slightly effective	Moderately effective	Very effective	Extremely effective
Fact Based Information (e.g., information, research, data)					
Employers (n=1110)	2.2%	15.5%	31.9%	37.3%	13.2%
Providers (n=199)	2.5%	17.1%	36.7%	31.7%	12.1%
Workers (n=179)	1.7%	19.0%	32.4%	35.2%	11.7%
Personal Experience and learning (e.g., case studies)					
Employers (n=1110)	1.6%	6.9%	23.5%	44.0%	24.1%
Providers (n=199)	1.5%	11.1%	32.3%	29.3%	25.8%
Workers (n=179)	1.1%	12.3%	19.0%	43.0%	24.6%
Consequences if risks aren't managed (e.g., injuries, lost time, workers compensation)					
Employers (n=1110)	2.5%	10.8%	30.1%	39.6%	17.0%
Providers (n=199)	7.5%	12.5%	39.5%	28.0%	12.5%
Workers (n=179)	5.6%	10.6%	20.7%	39.1%	24.0%

Table 39 Messaging preference by role

Videos/films					
	Don't Prefer	Prefer slightly	Prefer a moderate amount	Prefer a lot	Prefer a great deal
Employers (n=1086)	4.4%	6.9%	24.3%	42.3%	22.1%
Providers (n=193)	7.3%	11.4%	32.6%	35.8%	13.0%
Workers (n=175)	6.9%	10.3%	30.3%	36.0%	16.6%
Case studies					
Employers (n=1086)	2.9%	12.1%	31.5%	40.5%	13.0%
Providers (n=193)	4.1%	18.9%	29.6%	33.2%	14.3%
Workers (n=175)	3.5%	14.5%	34.3%	36.0%	11.6%
Conferences / Events / Workshops					
Employers (n=1086)	9.2%	16.8%	37.9%	26.7%	9.5%
Providers (n=193)	7.1%	18.4%	39.8%	24.5%	10.2%
Workers (n=175)	8.9%	18.9%	30.2%	26.6%	15.4%
Electronic Publications					
Employers (n=1086)	4.8%	17.8%	35.6%	33.6%	8.2%
Providers (n=193)	10.9%	25.4%	37.3%	22.3%	4.1%
Workers (n=175)	17.6%	22.9%	27.1%	25.9%	6.5%
Hard copy resources					
Employers (n=1086)	12.3%	24.5%	29.9%	27.1%	6.2%
Providers (n=193)	17.4%	34.2%	30.5%	16.3%	1.6%
Workers (n=175)	20.7%	19.5%	31.4%	21.3%	7.1%
Social media					
Employers (n=1086)	24.1%	25.4%	29.2%	17.8%	3.5%
Providers (n=193)	26.4%	21.2%	34.2%	16.6%	1.6%
Workers (n=175)	41.0%	16.8%	27.3%	12.4%	2.5%
Email Alerts					
Employers (n=1086)	5.3%	13.9%	31.1%	35.4%	14.3%
Providers (n=193)	17.7%	25.5%	29.7%	20.3%	6.8%
Workers (n=175)	19.5%	20.7%	27.8%	24.9%	7.1%

One respondent noted the role of the HTLT culture in contributing to fear of disability “the appropriate use of language being so important” when delivering HTLT type of information to target audiences. “There is a lot of fear surrounding "back injuries" due to the use of inappropriate language (especially within the media)” and to be mindful when creating new messages. (Health care & social assistance)

Completion of the survey respondents’ final words: Do you have anything to add?

The questionnaire asked respondents if they had anything else to add, and 10% of respondents provided additional comment (n=179). Comments covered a wide range of topics and perspectives; a summary is provided in Table 40.

Table 40 Free comment responses

Comment Category	N (179)	%
Regulator to provide more resources and training	28	16
HTLT needs to be task, person specific to be effective	28	16
HTLT used as one component of a HMT strategy	28	16
Workers and employers have a duty of care / to comply	23	12.8
HTLT is essential	9	5
Clear messaging needed from Regulator	8	4.4
Manual tasks are inherent in work/difficult to design out	8	4.4
Need case studies from similar industries (SMEs, type)	7	3.9
Cost is a barrier to change HTLT	7	3.9
HTLT does not address MSD risk factors - psychosocial/ work organisation aspects	5	2.7
HTLT does not consider ageing workforce	3	1.6
Free events favoured	2	1
HTLT is not evidence-based /outdated	2	1
Other:	21	11.7
WorkCover claims issues		
Motivator (is to) avoid litigation, not care for staff		
Broaden focus from backs to include other body regions (hernias, hands, and fingers)		
Legislate against HTLT		
Regulator (to) recommend and enforce workplace solutions		
Confusion between different safety regulators (mining /WHS)		
Managing poor safety performance		

Many took the opportunity to request that the regulator:

- provide more resources and training that is accessible, low cost and available more frequently in regional areas
- specify what training should be delivered *“from a legislative / evidence-based perspective”*
- use regulatory tools such as reviewing the Hazardous Manual Tasks Code of Practice and taking compliance action at workplaces where HMT risks are not controlled and where HTLT is used instead of appropriate HMT controls, and
- clarify legislative, jurisdictional, common parlance, and industry differences in terminology along with current vs legacy terms used in this area.

The following are illustrative quotations:

- *A review of the current COP for Manual Tasks would be beneficial along with updated tools and resources.* (Health care & social assistance)

- Employers sought information resources that are practical: *“Whilst all methods of communication will have some merit depending on the audience preferences, it is the content and the ease with which the information can be translated into practice that is of most value. How well the publisher of the information, be it regulator or researcher, understands my workplace or industry, how the work is done (not theoretically, but as it is performed in real time) and can communicate what compliance with our duties looks like or how the new knowledge can be implemented will affect how I use the information”* (Health care & social assistance)
- *Time is limited so communication in a succinct and concise format is paramount. We don't have time to read newsletters, case studies or watch videos 10 minutes in length. short 30sec - 2min PPTs/Videos/articles are best. Just get to the point. E.g. in one paragraph tell the story: why, who, where, what, how, when please. One sentence on each. use bulleting, highlighting etc.* (Healthcare social assistance)
- *Films are great can you make a 1-3mins version?* (Agriculture and fishing)
- *Safety regulator conferences are much better than paid ones, so these are vital* (Professional /Scientific).

Some respondents highlighted that HTLT was not evidence-based and not effective. One cited a seminal systematic review, and some questioned why the regulator was confusing stakeholders by appearing to support such an outdated concept by surveying its use. A sample of quotations are provided here:

- *The 2009 paper supported by the UK Health and Safety Executive; 'What Constitutes Effective Manual Handling Training? A Systematic Review' (<https://pubmed.ncbi.nlm.nih.gov/19734238/>) is worth reading. In summary "The evidence collected indicates that manual handling training is largely ineffective in reducing back pain and back injury." ... (details of the paper given) (Transport)*
- *Survey seems to bias towards the idea that these programs are evidence-based and prevent injury. The majority are not* (Provider, Health care & social assistance)
- *Current evidence does not support a 'correct lifting technique' (Provider, Education and training)*
- *There is now mixed messaging where even in this survey we talk about duties of Hazardous Manual Tasks and Manual Tasks. If the regulator cannot get the messaging correct, how do you expect the employer to get it right. The Legislation is very clear and that we have to*

manage Hazardous Manual tasks. We need to stick to that clear message (Public Administration).

References was made to the need for HTLT to be tailored and customised to the person/task to be performed in a practical setting to be effective. HTLT was considered essential by some.

The role of leadership, duty of care and compliance with WHS legislation and workers compensation processes by both management and workers was also mentioned. Costs and complexity were raised as barriers to complying with legislation and using HTLT as a *'doing something'*, or as a *'quick fix'*.

One person stated that health care employers focused on worker characteristics rather than engineering controls: *"worker traits and pre employment assessment rather than investing in ceiling hoists in an industry that has a predominantly female and middle aged workforce"*.

A number of participants raised concerns that HTLT did not accommodate /control for the wide variety of risk factors and issues that can cause MSDs from HMTs. For example respondents cited a range of physical and psychosocial risk factors not addressed through HTLT including forces e.g. from heavy loads that should have been divided and delivered in lighter bags, repetitive tasks, activities performed in awkward spaces where HTLT advice cannot physically be put into practice, aging musculoskeletal systems (especially knees: *"so which is better a sore back or sore knees"*), Psychosocial hazards were also not addressed through HTLT, including work organisation issues such as systems of work, proximity of storage areas, work satisfaction, work culture, safety culture *'Staff put clients first own safety second'* and *psychological components, 'stress and pressure'*.

Discussion

The objectives of the study were firstly to explore the prevalence, beliefs and drivers that result in the continued use of 'how to lift' types of training programs for HMTs. The second objective was to gather information to inform WHSQ strategies to assist stakeholders to pursue more effective approaches to managing the risks arising from HMTs. Findings of the HTLT survey show the use of HTLT is highly prevalent across industry sectors, as reported by employers, providers, and workers.

The analysis of the survey outlined in this report examined responses to address six key aims.

1. *Understand industry stakeholder knowledge, beliefs, and practices on conducting HTLT in workplaces*

- Overall, nearly half of all stakeholders reported that they believed how to lift training was an effective way of reducing injury. Despite regulator efforts to communicate that HTLT is not effective, these findings suggest that this knowledge has not reached many workplaces or changed their practices.
- Employers think HTLT should be provided because it is widely used in their industry, meets WHS legal obligations, is recommended by providers, easy to roll out, meets worker expectations, and senior managers like it or expect it to be used.
- Most respondents indicated they thought it was necessary to include HTLT in a strains and sprains injury prevention program. These findings suggest that, despite strong research evidence that HTLT is not effective as a strategy to prevent MSDs, this knowledge has not been translated into everyday prevention programs in workplaces.
- Stronger beliefs that HTLT is a WHS legislative requirement is a significant driver for its use. The stronger the belief that HTLT is necessary under WHS legislation, the more likely it is to be delivered.
- Many comments by respondents suggest a blurring of the interpretation of the terms "WHS legislation" and to meet "legal obligations". Workers' compensation, common law or mitigation of civil damages were referred to. For example, keeping records of HTLT training was cited as a way to provide evidence of meeting their responsibilities should an MSD workers' compensation claim be contested. The beliefs and practices within the statutory workers compensation and common law areas may be driving the use of HTLT and needs more study. Fact based information from findings can be disseminated to stakeholders via a knowledge mobilisation plan.

2. Determine whether stakeholders know that such training, (HTLT), as defined in the survey, is not evidence-based

Specific questions were not asked in relation to the evidence base relating to HTLT. A question about respondents' beliefs about the effectiveness of HTLT was used as a proxy for knowledge. Nearly 60 % of respondents believe that HTLT by itself is an effective way of reducing injury. Nearly 80% of employers had provided HTLT in the past two years. Some employers were aware of evidence around HTLT and cited a range of other reasons for continuing to utilise it. Respondents who didn't believe in the effectiveness of HTLT were clear why they chose not to utilise it '*... that lifting training has no evidence base and that best practice is using a risk management model looking at hazardous manual tasks*', '*There have been multiple studies that show that there is no evidence to suggest that manual handling training does anything to mitigate associated injuries or incidents*'.

However, whether employers believed HTLT was effective or not was not a significant factor for employers being more likely to deliver it. Some employers who considered HTLT an ineffective strategy reported they continued to utilise it.

Provider belief that HTLT is effective for reducing injury is not associated with a greater likelihood to deliver HTLT, being requested to provide HTLT is. Despite their own beliefs some providers continue to provide the service in response to demand from industry, suggesting an interdependency that, whilst employers continue to request HTLT, providers will deliver that service: '*It's such a small part of trying to reduce strain and sprain claims if you require someone to do manual work and manual risk through repetition load or awkwardness is present then you should change the work they are doing through controls. How to lift training is last on the hierarchy and has been shown to be ineffective. I do it because I'm asked by the employer to do so. I try to highlight best practice but sometimes it falls on deaf ears*' (Provider).

3. Understand the key drivers for providing HTLT style training in workplaces

The key drivers for HTLT provision were examined separately for employers and providers. Employers are significantly more likely to provide HTLT when they believe it is required to meet WHS legislation. The strongest influences on whether a provider would deliver HTLT was whether the service was requested of them. Providers' service delivery type is determined by requests from their customer base – and organisations are primarily requesting services in relation to manual tasks/manual handling (approx. 80% of service provision). The top 3 services commonly requested by employers as reported by providers were risk management (60%), HTLT (41%) and ergonomic assessments (36%). A belief that HTLT is necessary in a program aiming to prevent strain and sprain injury meant the provider was

more likely to deliver HTLT. The reasons why HTLT is included in risk management services by some providers could be further explored.

Respondents who indicated they were an ergonomist were least likely to provide HTLT compared to those with other professional backgrounds. Consultation with Ergonomists may reveal factors contributing to this.

4. *Identify associations between demographic, knowledge, beliefs and behaviour characteristics of respondents*

For employers, the level of WHS qualifications in the organisation, being a large organisation and having stronger beliefs that HTLT was a legislative requirement were strong influences on the use of HTLT. For providers, being asked to provide HTLT was the strongest predictor of whether they would provide HTLT, regardless of their location, sector, education level or background. Whilst not quite as influential, the belief that it was important to include HTLT in a strain and sprain prevention program meant some providers were more likely to provide that service than those who did not.

5. *What else industry is doing to manage musculoskeletal disorder (MSD) risks from hazardous manual tasks*

In relation to what else industry is doing to manage MSD risks, just over half of the employers indicated they were using a range of higher order controls, including elimination and mitigation, often citing lifting equipment *lifters, lifting aids – crane, forklifts, jibs etc; providing trolleys; ... the use of mechanical aids and/or purchasing items ...there are mechanical aids available such as tailgate lifters, trolleys or machinery (e.g. overhead cranes, telehandlers).*

Only 3% of respondents cited using elimination controls, *Elimination where possible, Engineering solutions...*

Employers reported the use of risk management processes to manage MSD risks citing, *Hazardous Manual Task Risk Assessments, manual task risk management, good work design, participatory ergonomics, implement HFE strategies in design and the redesign how work is performed and the products, systems and work environment to optimise the safety and productivity of its people and operations.*

Further research to determine employer use of suitable controls and what gaps exist in them meeting legislative requirements is needed. Employers indicated a preference for industry case studies and

were using HTLT because others in their industry were using it. Whether more examples of successful industry HMT risk management controls, influences employers' readiness to change their strategies is an area for potential examination.

6. Establish any associations for stakeholder behaviour and preferences for learning and gathering information about managing HMT

For employers, the WHS regulators' websites (47%) and WHS associations (45%) were the most common sources of information for managing hazardous manual tasks.

For those employers using HOC, the next most common sources of information were similar businesses, internet and industry associations. Employers using HOC were more likely to finding their information from professional associations, WHS associations and Journals/Industry publications than those not using HOC. Employers not using HOC were more likely to use consultants for information than those using HOC.

Half of all employers thought they would find: fact and data-based information, consequences if risks are not managed and sharing of experience and learnings very effective to extremely effective formats for obtaining information on manual task risk management. Also 68% of both employers and workers rated case studies to be very effective to extremely effective.

Employers preferred their distribution of information via: video and film, email alerts, conferences, e-publications and hard copy. Social media was rated as the least preferred option for receiving information from the WHS regulator. Also 41% of workers did not prefer social media as a messaging method by the regulator.

An overview of the relevant provider questions and employer open ended questions was also undertaken to identify misconceptions about HTLT and managing HMT. If providers reported they did not deliver HTLT, as defined by the survey, responses about their services described training similar to HTLT. Illustrative quotes of 'other' provider services included: *Body awareness programs, anatomical models and charts, lever models to demonstrate effect of gravity on postures etc., manual tasks 'train the trainer' practical programs, Correct technique, stretching and release stretches; Dynamic Back Care; training on whole body movement and care.*

When asked what they were doing other than HTLT to manage HMT risks a number of employers also cited worker training programs consistent with the definition of HTLT provided in the survey. The results suggest the definition of HTLT was too narrow, confusing or did not match closely enough the

technique training provided by those providers and employers. The term HTLT was used in the survey to ensure HTLT was differentiated from risk management training. It is evident, that HTLT is being incorporated into all types of training, including risk management and use of equipment, or as part of an overall approach to HMT. A number of responses indicated the use of HTLT as an interim measure while instituting HOC.

Incorporating HTLT along with HMT risk management approaches is being used by some employers and providers to address their understanding of what is required to meet their duty of care under risk based WHS legislation. Furthermore, HTLT was cited as being used as a means of mitigating liability in common law cases as an employee defence. An issue raised in previous research is that knowledge around the causes of MSDs is limited, and this knowledge gap influences decisions around what is included in prevention programs (Oakman et al, 2019).

All respondents were asked for any other comments at the end of the questionnaire. In relation to communications, participants took the opportunity to list their preferences for receiving information on HMT, providing insights into what information they would like and how it could be delivered. *You could provide training...so then everybody will be delivering the same thing/ what you want them to deliver from a legislative/ evidence-based perspective.* The responses suggested a need to clarify confusion about what the regulator requires in relation to HMT.

The most common comments related to the need for free, *standardised* resources to be provided by the regulator. Examples of open text responses include:

- *You could provide training/certification course accredited by WHS QLD/NSW so then everybody will be delivering the same thing/what you want them to deliver from a legislative/ evidence-based perspective (Construction)*
- *I would strongly encourage a review of the QLD Code for Hazardous Manual Handling, and the addition of training presentations for each COP, provided by the regulator, that covers COP content and includes a case study that appeals to emotion as a driver of change in worker behaviour (Construction)*
- *Need an overhaul of the training messages given to workers from the regulator and training authorities (Manufacturing)*
- *A review of the current COP for Manual Tasks would be beneficial along with updated tools and resources (Health and social care)*
- *I think the more tools produced by regulatory bodies or authorities on topics will mean more people will utilise their services. If it is free it will happen. If you let barriers to creep in, many people will consider it "too hard" and revert back to their ways (Transport)*

- *Training in 'how to lift' only looks at a small part of the problem of hazardous manual tasks and MSD. The industry would benefit more from information on identifying the hazardous risk factors of a task and strategies to address and manage those risk factors. What makes a task more hazardous - What does a hazardous manual task risk assessment look like and how do we document this in a SWMS? - This is what businesses want to know (Construction).*

General discussion

One of the notable gaps in the responses was the limited mention of strategies being used to address psychosocial hazards. Although specific questions were not asked in relation to either physical or psychosocial aspects of work, a comprehensive approach to MSD prevention requires addressing all relevant hazards. The survey focus on HTLT and HMT terminology directs attention to the physical aspects of work and may explain the small number of employers citing examples of addressing work organisation and other psychosocial risk factors. An explanation for why employers focus on low order physical strategies may be the reasons they provided in this survey for use of HTLT, that they are a low cost, easily implementable and a defence against common law claims. Alternatively, and consistent with previous research, it may be related to a lack of understanding of the importance of psychosocial hazards in the development of MSDs (Oakman, Macdonald, and Kinsman, 2019). Future research could consider more in-depth evaluation of what stakeholder beliefs are in relation to aetiology of MSDs as this is likely to influence their choices in relation to prevention strategies.

It is clear that an evidence to practice gap exists in the area of HTLT and MSD prevention programs. The analysis also suggests that perceived legislative duties, medico legal common law precedents, long-standing industry practice and expediency contribute to this gap.

Future work could consider the utilisation of one of the many implementation science frameworks to deepen understanding around beliefs, skills, and knowledge (e.g., RE-AIM (Reach, Effectiveness, Adoption, Implementation Maintenance Framework, CFIR (Consolidated Framework for Implementation Research) (Nilsson, 2015) in the area of MSD prevention. The use of such frameworks could inform the development of knowledge translation strategies to maximise the likelihood of uptake and improve effectiveness in the area MSD prevention. Multiple barriers exist in effective translation of evidence to practice, and in this case include employers, providers, organisations, and community and policy levels. Therefore, to ensure effective change, the use of a systematic implementation science framework could guide thinking about how to ensure MSD prevention messages are appropriate and will meet the needs of multiple stakeholders involved to ensure its effectiveness. A clear example arises from the current analysis, in the continued service provision of

HTLT, where providers will continue to deliver HTLT when organisations request the service, even when they don't believe it to be effective. To ensure a shift in this practice different strategies may be required to target these various key stakeholders.

Strengths and Limitations

All studies have limitations. A key strength of the current study is the large number of survey responses received. The survey questions were developed by the team at WHSQ for regulators for specific compliance strategy development and advisory, resource development purposes which does limit the generalisability of the results. Terminology in questions on interventions other than HTLT was chosen to reflect employers' duties under Australian model WHS legislation for controlling MSD risks. This specific purpose use of terminology may limit generalisability of results when asking respondents to comment on controls they are using other than HTLT. The survey was disseminated through a range of strategies through regulator networks. It is likely that those who responded are more engaged with WHS than others who are not receiving communications. However, the responses suggest that if the respondents are more engaged, the use of HTLT as a prevention strategy remains highly prevalent.

Further investigation

The study results highlight some interesting findings for consideration to inform further WHSQ programs aimed at targeting a reduction in the use of HTLT as a prevention strategy for MSDs. Addressing major behaviour change is complex and although these results provide insights into the prevalence and the beliefs, a range of other questions emerge which would benefit from further investigation including a deeper qualitative exploration of what would change the behaviour of employers and providers in their use of HTLT in risk management programs, why do those who believe it to be ineffective still use it, and what would incentivise them to discontinue this practice (employers and providers). The issue of people believing that HTLT is a legislative requirement warrants further investigation as this is central to designed strategies to counteract that belief. In addition to understanding beliefs, the issue of reach is challenging, that is how to get the message across to employers who are typically in industry sectors more difficult to access could provide useful insights into how to ensure messaging is appropriately disseminated.

Conclusion

The survey data analysed in this report was focussed on the provision of HTLT and the beliefs and knowledge around why it is used in MSD strain and sprain prevention programs. The results presented here provide insights into what underpins some of these beliefs. Gaps remain in determining the

required actions to move industry strategies from lower order administrative controls or interventions such as HTLT, to higher order elimination or mitigation controls which may involve job redesign or improved use of equipment.

Recommendations

The reasons for the prevalence of HTLT are complex. The following recommendations have been drawn from the analysis of the survey data.

1. Communicate that HTLT is not a WHS legislative requirement.
2. Consult with legal professionals to better understand why industry thinks HTLT mitigates the risk of damages claims and liability. The consultation needs to include:
 - Further research around industries' common law expectations and experiences and measuring the accuracy of stakeholder perceptions about HTLT
 - Further research or legal opinion on recent judicial thinking and precedents regarding the torts of negligence and breach of statutory duty and HTLT style lifting technique training in work related MSD personal injury common law decisions
 - Mapping which statutory duties employers discharge against breaches determined by, or defences accepted in, common law decisions to determine gaps.
3. Work with research institutions to bridge the gaps in understanding what *causes* MSDs and what is *actually* required for effective prevention strategies. Future work should consider:
 - an evaluation on stakeholder beliefs, including whether improved knowledge on aetiology of MSDs and understanding of the legislation has a positive impact on their practices.
 - the impact of current terminology / language and messaging used around HMTs and what regulatory language would be more effective and what messages would be most compelling to employers.
4. Develop an agreed regulator position on HTLT and promote it widely. This will help inform regulator policy and strategies in response to the presence of HTLT in industry. This will assist in ensuring that communications from all regulators are in line with key messages and consistent to counter the mixed messages about HTLT in workplaces and the community.
5. Work with accreditation bodies to ensure HTLT is not included or perceived as a necessary component for compliance.

6. Work with peak bodies, unions, workers compensation insurers and employer associations to ensure the correct evidence-based information is disseminated to their members and customers.
7. Develop communication strategies and resources for industry including:
 - Fact based information from survey findings which can be disseminated to stakeholders via a knowledge mobilisation plan.
 - Continue regulator sponsored events to deliver clear messages about what is required in relation to MSD prevention, and why HTLT training is not an effective strategy and not a legislative requirement.
 - Expand education and resources for employers on what causes MSDs, to ensure there is widespread knowledge of the need to include psychosocial and physical hazards in prevention programs. This education should include the need to take a systems approach to include higher order controls and not just a focus on changing individuals' behaviour such as HTLT.
 - Promote existing and new HMT training toolkits and resources for employers to use in place of HTLT.
8. Work with employers and specific industry sectors to explore how HTLT can be replaced with evidence-based practice, for e.g. use of case studies to assist workplaces in understanding alternative solutions to the use of HTLT.
9. Expand the current regulator enforcement program for compliance with HMT risk management and suitable and adequate training.
10. Work with providers to develop strategies to use evidence-based interventions. Also, educate and work with providers on how to shift their practice away from HTLT delivery.
11. Continue to support educational institutions in their training of students in the field of hazardous manual task regulation, with reference to evidence-based practice.

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Appendices

Appendix 1

Details of the HTLT survey structure
NB the survey questions in this document are summarised for illustrative purposes.
Questions common to all participants – asked of all participants (employers, workers, providers, others)
Q1. Introduction
Q2. State in Australia
Q3 Which of the following options best describes your main role in your organisation? If you are an external consultant, please indicate the main focus of your services.
Q4 What industry provides the majority of your income? If you are a consultant which industry do you most frequently provide services to? (Use arrow to drop down list then select one)
Q5 What is the postcode of your workplace?
Q6a ' <u>How to lift</u> ' training programs in workplaces are typically programs that train workers in lifting techniques such as bending the knees, keeping a straight back, using a power stance and /or focus on core strengthening and abdominal bracing and /or include exercises for warming up or stretching. Please indicate your agreement or disagreement with the following statements 6a 'How to lift' training by itself is an effective way of reducing injury (19)
Q6b ' <u>How to lift</u> ' training programs in workplaces are typically programs that train workers in lifting techniques such as bending the knees, keeping a straight back, using a power stance and /or focus on core strengthening and abdominal bracing and /or include exercises for warming up or stretching. 6b. Please indicate your agreement or disagreement with the following statements 'How to lift' training is a necessary part of programs which aim to prevent strain and sprain injury (21)
Q6c ' <u>How to lift</u> ' training programs in workplaces are typically programs that train workers in lifting techniques such as bending the knees, keeping a straight back, using a power stance and /or focus on core strengthening and abdominal bracing and /or include exercises for warming up or stretching. 6c. Please indicate your agreement or disagreement with the following statements 'How to lift' training is necessary under WHS legislation (20)

Q7 Display This Question:

If 'How to lift' training programs in workplaces are typically programs that train workers in liftin... = 'How to lift' training by itself is an effective way of reducing injury [Neither agree nor disagree]

Or 'How to lift' training programs in workplaces are typically programs that train workers in liftin... = 'How to lift' training by itself is an effective way of reducing injury [Somewhat disagree]

Or 'How to lift' training programs in workplaces are typically programs that train workers in liftin... = 'How to lift' training by itself is an effective way of reducing injury [Strongly disagree]

Or 'How to lift' training programs in workplaces are typically programs that train workers in liftin... = 'How to lift' training by itself is an effective way of reducing injury [Don't know]

Q7 You said earlier that you disagreed or are unsure about whether 'How to lift' training is an effective way of reducing injuries - Do you provide 'How to lift' training? (Y/N/ N/A)

Q8. Display This Question:

If You said earlier that you disagreed or are unsure about whether 'How to lift' training is an effe... = Yes

Q8 Why is that? (Select all that apply)

10 structured drop down options plus 'other please describe'

Looks for drivers.

Q9. Display This Question:

If 'How to lift' training programs in workplaces are typically programs that train workers in liftin... = 'How to lift' training is a necessary part of programs which aim to prevent strain and sprain injury [Strongly agree]

Or 'How to lift' training programs in workplaces are typically programs that train workers in liftin... = 'How to lift' training is a necessary part of programs which aim to prevent strain and sprain injury [Somewhat agree]

Q9 You agreed earlier that you thought 'How to lift' training is a necessary part of a preventing strain and sprain injuries program - Why is that? (Select all that apply)

Same 10 options plus 'other')

Looks for drivers.

Q19 Common questions asked of all participants on messaging. This next section will help WHS regulators to define the best way to reach our target audiences.

Q20 How effective would you find the following types of messages for manual task risk management?

(Fact based (e.g. information, data, research) / About personal experience and learnings (e.g. case studies)/ About consequences if risks aren't managed (e.g. injuries, lost time, workers compensation claims)

Q21 Which of the following methods of messaging do you prefer?

(Videos film/Case studies/ conferences Events Workshops / electronic publications/ hard copy / social media / subscribed email alerts

Common questions at the end of the survey – questions asked of all participants at completion of the survey.

Q26 Do you have anything else to add?

Q27 enter prize draw? Y/N

Q28 click here to enter prize draw

Q29 Would you be interested in attending a focus group to explore these questions more thoroughly and further share your opinions and experiences/N

Q30 click to register for focus group

Q31 you have completed survey thank you

Occupational role specific questions (see below)		
Employer only questions	Worker only questions	Provider and “Other” occupational roles only questions* (*including a small regulator subset)
Q25 How do you keep up to date with manual tasks risk management information? <i>(Select all that apply)</i>	Q32 Are there currently manual handling / manual tasks in your workplace?	Q10 Do you provide services in the area of manual tasks/manual handling?
Q32 Are there currently manual handling / manual tasks in your workplace?	Q33 Have manual handling / manual tasks in your workplace caused strain and sprain injuries e.g. back, neck or shoulder injuries? Y/ unsure/ N	Q11 What services do workplaces most commonly request from you regarding prevention of injuries from manual tasks? <i>(Select up to three)</i> Includes: Other - please describe
Q33 Have manual handling / manual tasks in your workplace caused strain and sprain injuries e.g. back, neck or shoulder injuries? Y/ unsure/ N	Q34 Have you received information and instruction (video, eLearning, group training) where you were trained in 'How to Lift' techniques, such as; bending the knees, keeping a straight back (a neutral spine), abdominal bracing and/or stretching, in the past two years?	Q12 Do you/your organisation deliver “How to lift” training i.e. training where workers are trained in techniques such as bending the knees, keeping a neutral spine, core strengthening (e.g. abdominal bracing, warming up and/or doing stretching/strengthening exercises)? Y/N
Q38 Have you arranged (or provided) information and instruction (video, eLearning, group training) where workers are trained in ‘How to lift’ techniques, such as, bending the knees, keeping a straight (neutral) back, core strengthening e.g. abdominal bracing and/or group stretching, in the last two years? Y/N	Q35 What information did the training contain? <i>(Select all that apply)</i>	Q13 <i>Display This Question:</i> <i>If Do you/your organisation deliver “How to lift” training i.e. training where workers are trained i... = No</i> Q13 What do you / your organisation do instead?
Q39 What information did the training contain? <i>(Select all that apply)</i>	Q36 Do you believe the instruction /training that you have received has been effective? Def Y/ prob Y/Unsure Prob N/Def No	Q14 Do you/your organisation provide advice on alternatives to “How to Lift” training?
Q40 Who designed the training? <i>(Select one)</i>	Q37 why do you say that?	Q15 <i>Display This Question:</i> <i>If Do you/your organisation provide advice on alternatives to “How to Lift” training? = Yes</i> Q15 If yes, what do you / your organisation cover in that advice? Free text field

Employer only questions	Workers	Providers & others questions
<p>Q41 Do you believe the lifting instruction /training that was provided has been effective?</p>		<p>Q16</p> <p><i>Display This Question:</i></p> <p><i>If Do you/your organisation deliver “How to lift” training i.e. training where workers are trained i... = Yes</i></p> <p>Free text field</p>
<p>42 How have you been able to tell?</p> <p>Narrative free text field</p>		<p><i>Q16 Display This Question:</i></p> <p><i>If Do you/your organisation deliver “How to lift” training i.e. training where workers are trained i... = Yes</i></p> <p>Q16 Would your organisation be prepared to cease offering “How to Lift” training?</p>
<p>Q43 A definition of HMT is given – no question is asked</p> <p>Q43 A hazardous manual task means a task that requires a person to lift, lower, push, pull, carry or otherwise move, hold or restrain any person, animal or thing that involves one or more of the following— repetitive or sustained force; high or sudden force; repetitive movement; sustained or awkward posture; exposure to vibration.</p>		<p>Q 17</p> <p><i>Display This Question:</i></p> <p><i>If Would your organisation be prepared to cease offering “How to Lift” training? = Unsure</i></p> <p><i>Or Would your organisation be prepared to cease offering “How to Lift” training? = Probably not</i></p> <p><i>Or Would your organisation be prepared to cease offering “How to Lift” training? = Definitely not</i></p> <p>Q17. Why not?</p>
<p>Q44 Are you doing things (other than training) at your workplace to manage your risks from hazardous manual tasks? Y/N</p>		<p>Q18 In general, how likely do you think workplaces would be to stop “how to lift” training once they implement manual handling / manual tasks risk management processes?</p>
<p>Q45</p> <p><i>Display This Question:</i></p> <p><i>If Are you doing things (other than training) at your workplace to manage your risks from hazardous... = Yes</i></p> <p>Q45 If doing things other than training at your workplace to manage risks from HMT – please describe what you are doing to manage hazardous manual task risks:</p>		<p>Q22 What is your professional background? (Select all that apply)</p>

Employer only questions	Workers	Providers & other questions
<p><i>Display This Question:</i></p> <p><i>If Are you doing things (other than training) at your workplace to manage your risks from hazardous... = Yes</i></p> <p>Q46 Where did you go to get information on putting these things in place? <i>(Select all that apply)</i></p>		<p>Q23 What is the highest level of formal occupational/workplace health and safety education/training that you have attained? <i>(Select one)</i></p> <p>Has free text 'other' field</p>
<p>Q47 Please describe the size of your business (including casuals & temps):</p>		<p>Q24</p> <p><i>Display This Question:</i></p> <p><i>If What is the highest level of formal occupational/workplace health and safety education/training t... != No formal training</i></p> <p>Q24 Was hazardous manual task legislation a component of your course?</p>
<p>Q48 How does your organisation coordinate & resource its workplace health & safety <i>(Select up to two)</i></p>		
<p>Q49 What is the highest level of formal workplace/occupational health and safety education / training, any of your staff members has attained? <i>(Select one)</i></p>		
<p>The survey contained 49 questions (several of which were statements or instructions).</p>		

Appendix 2

Table A1: Characteristics of employers implementing higher order controls compared to not

	No (n=407)		Yes (n=501)	
	n	%	n	%
State				
QLD	319	78.4%	399	79.6%
NSW	59	14.5%	63	12.6%
Other	29	7.1%	39	7.8%
Sector				
Agriculture, forestry, and fishing	23	7.3%	31	7.5%
Construction	97	30.9%	108	26.2%
Education	51	16.2%	33	8.0%
Healthcare and social assistance	35	11.1%	48	11.6%
Manufacturing	34	10.8%	92	22.3%
Mining	14	4.5%	27	6.5%
Public Administration	35	11.1%	36	9.2%
Transport, postal, and warehousing	25	8.0%	36	8.7%
Business Size				
1-4 employees	23	5.8%	9	1.8%
5-19 employees	70	17.5%	54	10.9%
20-199 employees	174	43.5%	199	40.3%
200+ employees	122	30.5%	226	45.7%
Non-employing (sole trader)	11	2.8%	6	1.2%
Source of Manual Tasks Information				
Professional association	53	13.0%	121	24.2%
Industry associations	94	23.1%	154	30.7%
WHS associations	119	29.2%	216	43.1%
WHS regulator website	182	44.7%	253	50.5%
Internet searches	94	23.1%	168	33.5%
Workers compensation insurance provider	71	17.4%	92	18.4%
Consultant	33	8.1%	57	11.4%
Research partnership with a university	3	0.7%	12	2.4%
Union	17	4.2%	19	3.8%
Events	50	12.3%	113	22.6%
Journals, Industry publications	62	15.2%	109	21.8%
Do not keep up to date with manual tasks information	25	6.1%	8	1.6%
Employer - OHS training				
Post graduate degree	50	12.9%	91	18.9%
Bachelor's degree	51	13.2%	70	14.6%
Graduate diploma	15	3.9%	29	6.0%
Graduate certificate	5	1.3%	9	1.9%
Diploma	80	20.7%	118	24.5%
Certificate IV	91	23.5%	106	22.0%
5 day course	26	6.7%	19	4.0%
Short course	27	7.0%	19	4.0%
None	42	10.9%	20	4.2%
Coordinate & resource its workplace health & safety				
National or State WHS Manager	107	26.3%	210	41.9%
Single full time qualified WHS professional role	104	25.6%	154	30.7%
Part-time qualified WHS role	45	11.1%	56	11.2%
WHS as part of payroll, human resources role, non-specialised	44	10.8%	47	9.4%
WHS is part of manager, team leader, supervisor's role	134	32.9%	162	32.3%
Small business	51	12.5%	27	5.4%
Team of WHS personnel on staff	9	2.2%	18	3.6%

Table A2 Use of HTLT and Higher order controls among employers by state, sector, business size, information sources and training

	HTLT only (n=281)		HTLT and HOC (n=419)		HOC only (n = 82)	
	n	%	n	%	n	%
State						
QLD	219	77.9%	334	79.7%	65	79.3%
NSW	41	14.6%	53	12.6%	10	12.2%
Other	21	7.5%	32	7.6%	7	8.5%
Sector						
Agriculture, forestry, and fishing	18	8.4%	25	7.2%	6	9.1%
Construction	58	27.0%	88	25.4%	20	30.3%
Education	32	14.9%	29	8.4%	4	6.1%
Healthcare and social assistance	27	12.6%	46	13.3%	2	3.0%
Manufacturing	28	13.0%	80	23.1%	12	18.2%
Mining	7	3.3%	22	6.3%	5	7.6%
Public Administration	24	11.2%	30	8.6%	8	12.1%
Transport, postal, and warehousing	21	9.8%	27	7.8%	9	13.6%
Business size						
1-4 employees	14	5.0%	9	2.2%	0	0.0%
5-19 employees	37	13.3%	34	8.2%	20	25.0%
20-199 employees	118	42.3%	176	42.5%	23	28.7%
200+ employees	102	36.6%	191	46.1%	35	43.8%
Non-employing (sole trader)	8	2.9%	4	1.0%	2	2.5%
Source of Manual Tasks Information						
Professional association	45	16.0%	101	24.1%	20	24.4%
Industry associations	72	25.6%	136	32.5%	18	22.0%
WHS associations	94	33.5%	182	43.4%	34	41.5%
WHS regulator website	137	48.8%	208	49.6%	45	54.9%
Internet searches	71	25.3%	142	33.9%	26	31.7%
Workers compensation insurance provider	55	19.6%	81	19.3%	11	13.4%
Consultant	29	10.3%	49	11.7%	8	9.8%
Research partnership with a university	1	0.4%	8	1.9%	4	4.9%
Union	9	3.2%	16	3.8%	3	3.7%
Events	37	13.2%	98	23.4%	15	18.3%
Journals, Industry publications	47	16.7%	92	22.0%	17	20.7%
Do not keep up to date with manual tasks information	12	4.3%	5	1.2%	3	3.7%
Employer - OHS training						
Post graduate degree	38	13.9%	74	18.3%	17	22.4%
Bachelor degree	37	13.5%	57	14.1%	13	17.1%
Graduate diploma	13	4.7%	26	6.4%	3	3.9%
Graduate certificate	3	1.1%	8	2.0%	1	1.3%
Diploma	64	23.4%	108	26.7%	10	13.2%
Certificate IV	65	23.7%	89	22.0%	17	22.4%
5 day course	17	6.2%	15	3.7%	4	5.3%
Short course	16	5.8%	15	3.7%	4	5.3%
None	21	7.7%	13	3.2%	7	9.2%
Coordinate & resource its workplace health & safety						
National or State WHS Manager	86	30.6%	173	41.3%	37	45.1%
Single full time qualified WHS professional role	79	28.1%	138	32.9%	16	19.5%
Part-time qualified WHS role	29	10.3%	41	9.8%	15	18.3%
WHS (payroll), human resources role, non-specialised	34	12.1%	38	9.1%	9	11.0%
WHS is part of manager, team leader, supervisor's role	89	31.7%	144	34.4%	18	22.0%
Small business	31	11.0%	18	4.3%	9	11.0%
Team of WHS personnel on staff	6	2.1%	18	4.3%	0	0.0%
Other	2	0.7%	3	0.7%	0	0.0%

Table A3 Beliefs about HTLT by state**How to lift training by itself is an effective way of reducing injury**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
QLD (n=1374)	15.6%	14.0%	9.2%	35.4%	25.8%
NSW (n=254)	26.0%	16.5%	8.3%	35.0%	14.2%
Other (n=179)	29.6%	20.1%	3.9%	26.3%	20.1%

How to lift training is a necessary part of programs which aim to prevent strain and sprain injuries

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
QLD (n=1374)	2.8%	3.7%	4.1%	33.5%	55.9%
NSW (n=254)	5.1%	6.7%	5.5%	40.6%	42.1%
Other (n=179)	7.3%	6.1%	4.5%	36.3%	45.8%

How to lift training is necessary under WHS legislation

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
QLD (n=1374)	5.4%	4.3%	10.1%	29.8%	50.4%
NSW (n=254)	6.5%	8.1%	13.4%	40.1%	32.0%
Other (n=179)	7.6%	4.7%	14.0%	32.6%	41.3%

Table A4 Beliefs about HTLT by role**How to lift training by itself is an effective way of reducing injury**

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Employers (n=1269)	14.4%	15.1%	9.1%	36.8%	24.5%
Providers (n=236)	39.4%	16.9%	8.9%	21.6%	13.1%
Workers (n=204)	11.8%	12.3%	5.4%	36.9%	33.5%

How to lift training is a necessary part of programs which aim to prevent strain and sprain injury

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Employers (n=1269)	2.0%	3.1%	3.9%	36.4%	54.5%
Providers (n=236)	11.9%	11.4%	7.2%	33.9%	35.6%
Workers (n=204)	1.0%	2.0%	3.9%	26.5%	66.7%

How to lift training is necessary under WHS legislation

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Employers (n=1269)	3.9%	4.5%	10.7%	33.7%	47.2%
Providers (n=236)	16.2%	8.8%	15.4%	28.1%	31.6%
Workers (n=204)	1.5%	2.0%	7.1%	28.9%	60.4%