An tÚdarás Sláinte agus Sábháilteachta
Health and Safety Authority

PROTECTING PEOPLE AND PLACES HSE

Manual Handling and Ergonomics Risk Management

Matt Birtles
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Science Division, HSE

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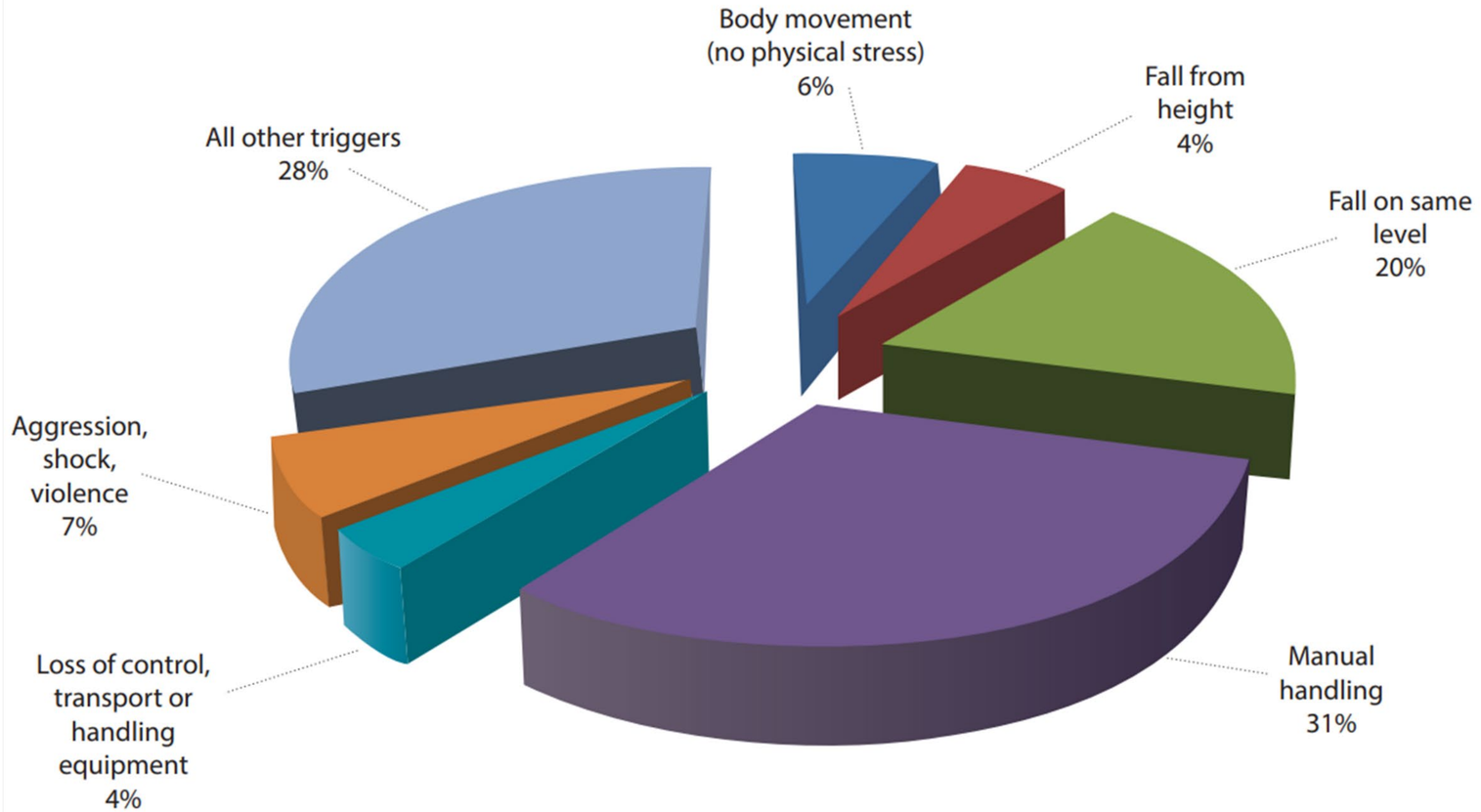
MSD Risk Management



HSA Summary of Injury, Illness and Fatality Statistics 2018 – 2019
https://www.hsa.ie/eng/publications_and_forms/publications/corporate/hsa_stats_report_2019.pdf

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Guide to the SHW at Work (General Application) Regulations (2007)

Ch 4 of Part 2: Manual Handling of Loads

Step 1 — **Identify the manual handling tasks that need to be assessed**

Step 2 — **Develop a risk assessment schedule**

Step 3 — **Carry out risk assessment process**

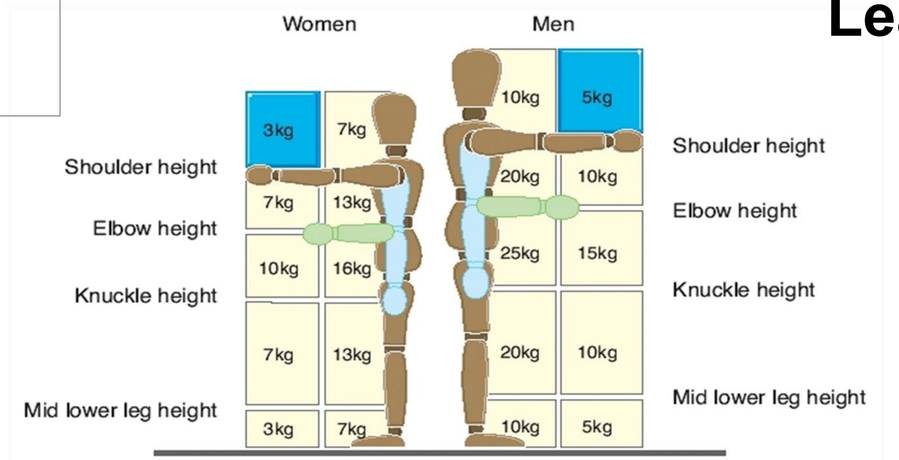
- Step 3a — **Task observation and description**
- Step 3b — **Collect the data (A well-documented risk assessment will have good quality information)**
- Step 3c — **Identification of the risk factors (Schedule 3 & MAC/RAPP)**
- Step 3d — **Solution development action plan**

Step 4 — **Review effectiveness of the control measures**

Identify the manual handling tasks that need to be assessed

Risk Indicators:

- Heavy or awkward loads (no fixed weight limit, but guideline weights exist for ideal conditions).
- Repetitive lifting or twisting movements.
- Awkward postures (bending, reaching, or working in cramped spaces).
- Unstable or slippery floors.
- Tasks associated with previous incidents or staff complaints.



Leading and lagging indicators ?

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Identify the manual handling tasks that need to be assessed

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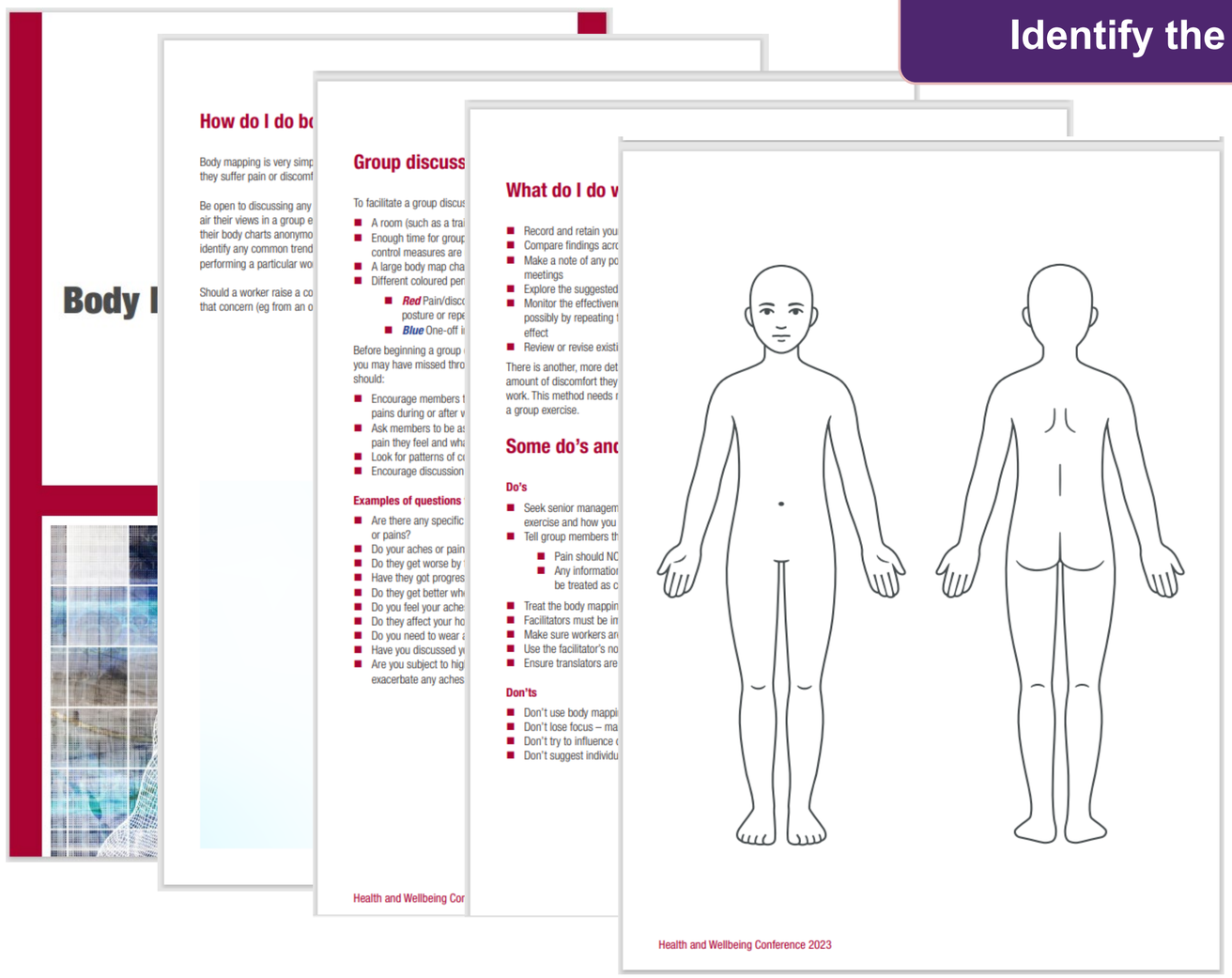

Identify the manual handling tasks that need to be assessed

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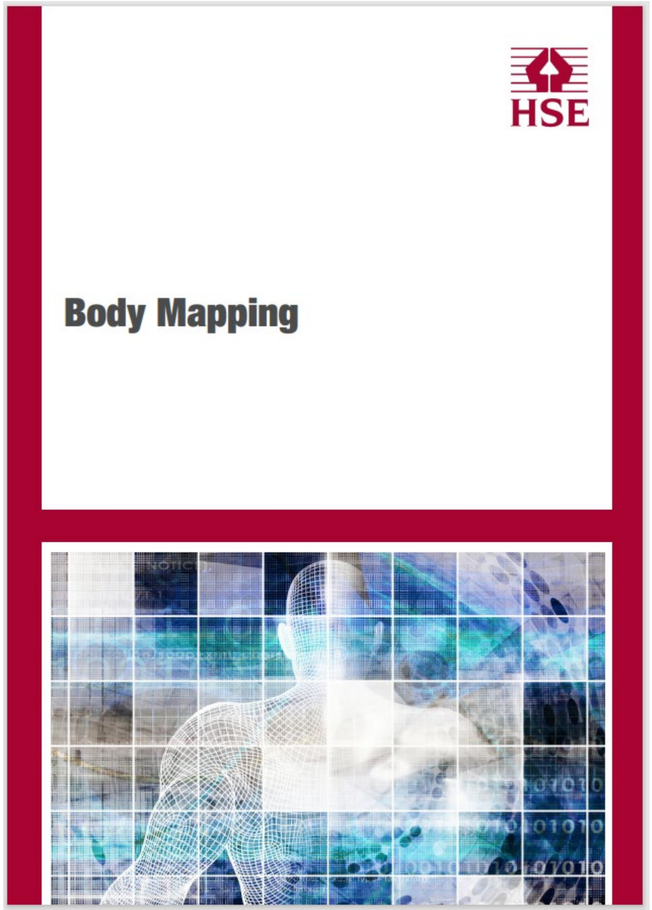

Identify the manual handling tasks that need to be assessed

Download here:

officialpublisher.tso.co.uk/body-mapping/

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Step 1	Identify the manual handling tasks that need to be assessed
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Step 3	**Carry out risk assessment process**
Step 3a	**Task observation and description**
Step 3b	**Collect the data (A well-documented risk assessment will have good quality information)**
Step 3c	**Identification of the risk factors (Schedule 3 & MAC/RAPP)**
Step 3d	**Solution development action plan**

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Carry out risk assessment process

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Carry out risk assessment process

Risk Factor	Example
The load is too heavy	*See risk filter*
The load is too large	*>75cm*
The load is unwieldy or difficult to grasp	*>75cm, sharp edges, loose contents or a patient (person).*
The load has to be held a distance from the trunk	*Over reaching*
The physical effort is too strenuous	
The physical effort is achieved by a twisting movement of the trunk	
The physical effort is likely to result in a sudden movement	*Lifting from a racking which is jammed. Load can suddenly move*
The physical effort is made with the body in an unstable posture	*Person stands on a stool while lifting*

Risk Factor	Example
There is not enough room, in particularly vertically, to carry out the activity.	*Narrow aisles, lifting above shoulders (e.g. onto pallets)*
The floor is uneven or is slippery or the floor or footrest is unstable	*Cracked flooring preventing easy pallet truck use*
The temperature, humidity or ventilation is unsuitable	*See guidelines*
Over-frequent or over-prolonged physical effort involving particularly the spine	*Repetitive scooping product or handballing*
There is insufficient bodily rest or recovery period	
There is excessive lifting, lowering or carrying distance	*Lifting heavy loads beginning or ending at floor level or above shoulder height*

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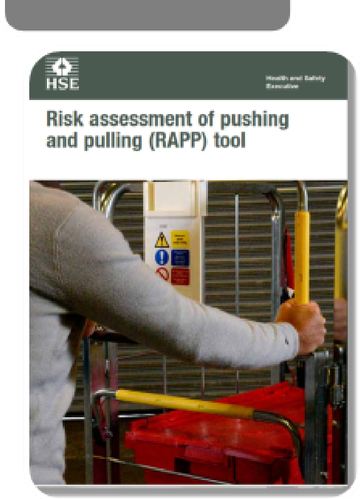
Carry out risk assessment process

Use RAPP

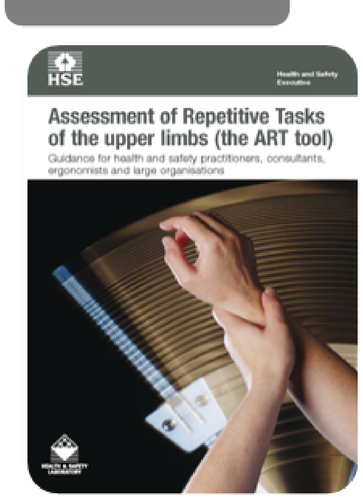


For pushing and pulling

Use MAC

All items lifted of carried weigh about the same

Use ART



Items weigh less than ~ 4 kg

The task is mostly upper-limb

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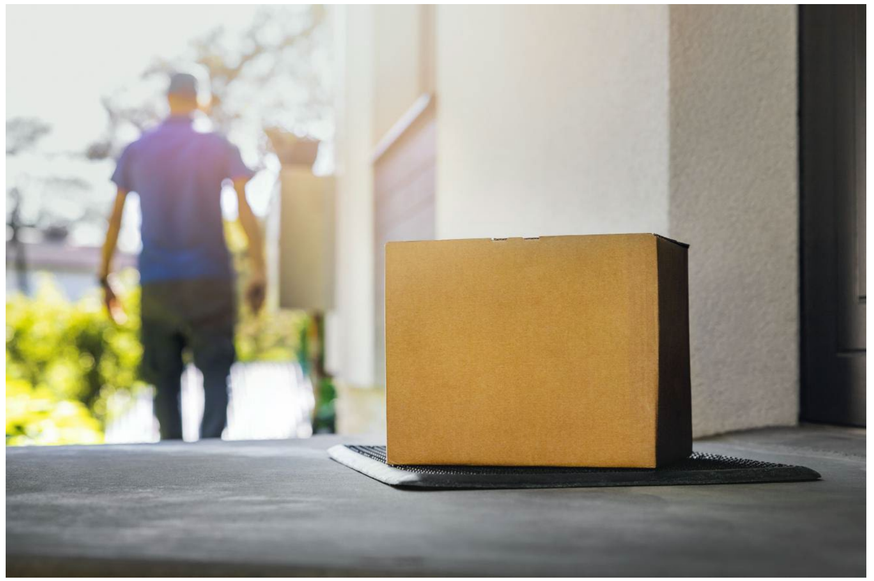
Carry out risk assessment process

Risk Factors	Colour Band (G,A,R or P)			Numerical Score		
	Lift	Carry	Team	Lift	Carry	Team
Load weight and lift/carry frequency	P			10		
Hand distance form the lower back	R			6		
Vertical lift region	G			0		
Trunk twisting / sideways bending Asymmetrical trunk / load carrying	R			2		
Postural constraints	A			1		
Grip on load	R			2		
Floor surface	G			0		
Other environment factors	G			0		
Carry distance (carrying only)						
Obstacles en route (carrying on)						
Communication and co-ordination (team handling only)						
Other risk factors e.g. individual factors, psychosocial factor, etc.	TOTAL SCORE:			21		

When to use the HSE tools?



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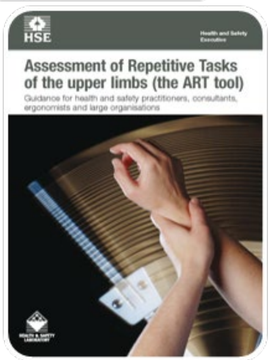
When to use the HSE tools?

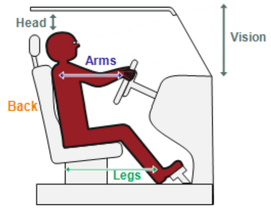
Use ART

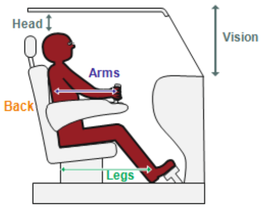


- Hand intens
- Low weight
- Not lifting/m dling
- More than a day

Use MAC

- For liftir
- Weights
- Bursts o





- To look at diving tasks
- Consider posture, duration, WBV
- Highlight manual handling (but assess with MAC)

- ly similar
- All pushing pulling
- On wheels or not

Use MAC

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Step 3d

Solution development action plan

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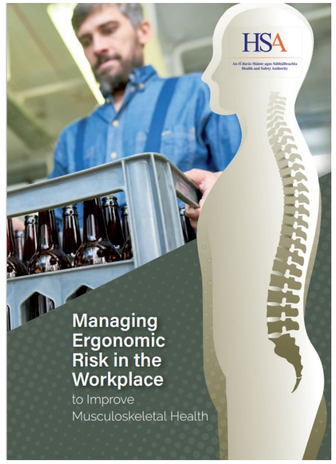

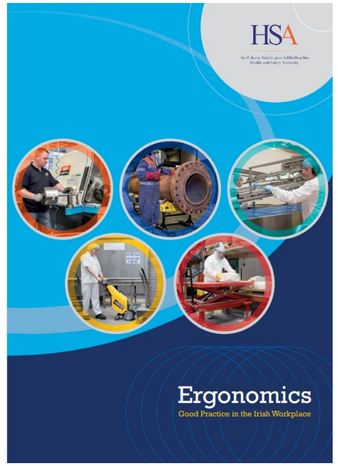

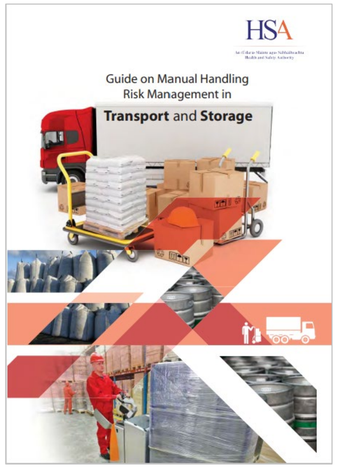

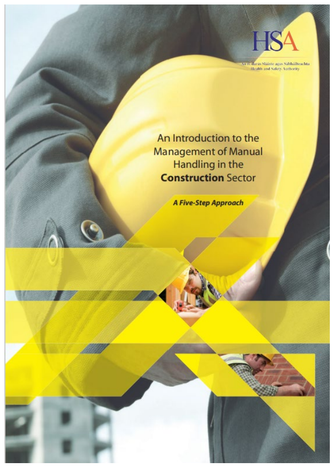

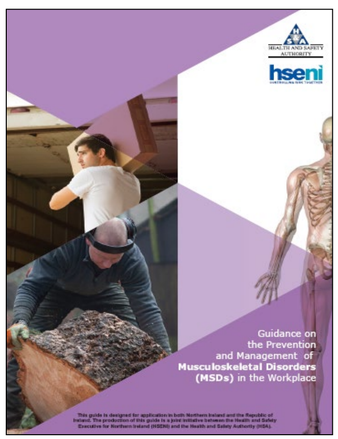

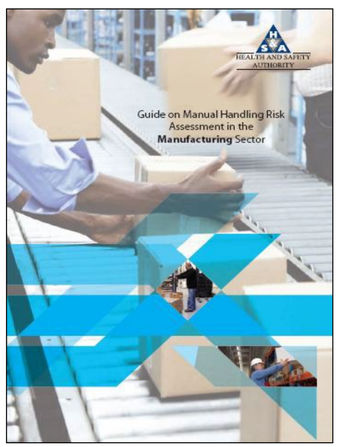

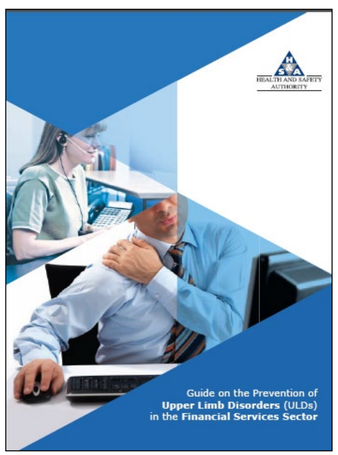

Construction Case Study
https://www.hsa.ie/eng/workplace_health/manual_handling_display_screen_equipment/guidance/ergonomics/ergonomics---rhattigan-4pg-v5-copy.pdf

Health Sector Case Study
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Solution development action plan

https://www.hsa.ie/eng/Publications_and_Forms/Publications/

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HEALTH AND SAFETY AUTHORITY

Ergonomics Good Practice Case Study

Construction Sector

JJ Rhatigan & Company

Organisation: JJ Rhatigan & Company
Address: Wolfe Tone House, Fr. Griffin Road, Galway, H91 PW72
Phone: (091) 580 800
Contact: Emmet Hynes, Group Health & Safety Manager

This case study demonstrates how JJ Rhatigan & Company managed ergonomic risks through the introduction of a range of engineering and organisational improvements in the way work was carried out to avoid or reduce the risk of musculoskeletal injury.

The Project Team Involved

Left to right: Seán Nolan, Carpenter, Barry Brennan, Health & Safety Adviser, Michael Nolan, Carpenter, Pat O'Malley, Contracts Manager, Willie Flynn, Site Foreman, Des Leamy, Health & Safety Manager

The Organisation

JJ Rhatigan is a leading main contractor at the forefront of the construction industry for over 65 years. Founded in 1952 by John J Rhatigan, the company has been setting standards in the construction industry while staying true to its family roots ever since. JJ Rhatigan has continued to expand into new sectors and new regions with offices in Dublin, Galway, Cork, Sligo and London. With 550+ employees, staff levels have increased by 15% in the last 12 months.

01 Stage 1: Problem Identification

Description of Task

A new office building was being constructed in Galway City; the building design specified that large stone cladding units were to be installed and fitted to the facade of the building. The stone cladding units were large and heavy, varying from 19.4kg to 143.7kg. A specialist sub-contractor was procured by the company Project Supervisor Construction Stage (PSCS) to install the stone cladding units on site. The sub-contractors initial proposed system of work was based on the long-established traditional methods of manual transfer of each stone cladding unit from a pallet on the loading bay onto a trolley and then a two-person manual lift (and hold) during the final placement of stone cladding in the building's facade.

Evidence of Risk Factors

- ☐ Awkward posture while holding the stone cladding unit in position at the building façade
- ☐ The weight of the stone cladding units (up to144kg load weight) and the upper arms are angled away from the body and the trunk is bent forward
- ☐ Twisting postures while manoeuvring and aligning the stone cladding units prior to installation
- ☐ Lifting heavy stone cladding units from the trolley/scaffold up to chest height

02 Stage 2: Problem Solving Process

A *'Task Team'* was put together involving site management, the project health and safety adviser and the sub-contractor to explore opportunities for the development of a new system of work that would allow safe installation of the stone cladding units using a mechanical solution. The load weight specifications were sourced from the supplier, as this information was not available ahead of the stone cladding installation process. Agreement was reached that a Lifter/Grab or a Slab Lifter would be installed to eliminate the manual handling of the stone cladding units onto the building facade.

Problem Solving Activities

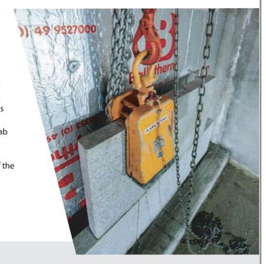
The main activities undertaken involved:

- ☐ sourcing the dimensions and load weight specification data for the stone cladding units;
- ☐ sourcing a new mechanical handling solution that was safe and appropriate to lift stone cladding without causing any damage to the finished stone;
- ☐ ensuring that all lifting attachments and customised cantilever brackets to be used as part of the mechanical handling solution were certified; and
- ☐ preparing a new safe system of work with a step-by-step description of the stone cladding installation process that reduced risk and did not impact negatively on productivity.

03 Stage 3: Outcome

Main Interventions

A bespoke certified mild steel cantilever bracket was manufactured and hung from the top of the wall and secured into position. A chain block was then attached to the cantilever bracket with a certified D-Shackle connection and the Lifter/Grab was then attached to the chain block using designated attachment points. The cantilever bracket was moved horizontally along the top of the wall as the stone cladding progressed.



04 Stage 4: Results

Initially, it took some time to bed in the new stone cladding installation process through consultation with the sub-contractor. However, once it was operational, it resulted in a more efficient installation process and the elimination of significant ergonomic risk factors.

Health benefits (including risk factors like force, repetition, posture eliminated or reduced)
The introduction of the chain block and Lifter/Grab eliminated the manual lifting of very heavy stone cladding units and avoided the need for sustained awkward bending and twisting postures that resulted from the manual installation process.

Evidence of innovation or creative thinking
The use of the beam runners for ease of stone cladding installation.

Evidence of team work
Yes, a team was put together which involved site management, the site safety adviser and the sub-contractor to explore opportunities for the development of a new system of work which would allow safe installation of the stone cladding units using a mechanical solution.

Evidence of consultation and communication with those that worked on this production process
There was ongoing consultation with the stone cladding installation sub-contractor to agree on the appropriate system of work using the Lifter/Grab.

Evidence of any productivity or efficiency improvements
The stone cladding installation was carried out more efficiently as a result of the introduction of the new system of work and without a negative impact on productivity.

Evidence of reduced lost days due to accidents or ill health
There were no reported injuries, however there was evidence of a significant reduction in ergonomic risk exposure as a result of the elimination of the high-risk manual handling of stone cladding units.

Evidence of management commitment and investment
There was commitment from the company and the Project Supervisor Construction Stage (PSCS) in agreeing that there was a need to improve the stone cladding installation process in order to address ergonomic health risks.

Return on investment
Worker injury and fatigue significantly reduced. All mechanical lifting equipment was reused on other projects.

Evidence of increased knowledge and awareness of ergonomics
There was increased awareness of the availability of evidence-based risk assessment tools available such as the Health and Safety Executive Mac Tool (UK) that could be used to quantify ergonomic risks and inform what appropriate actions may be required based on the Risk Assessment results. The company participated in the Health and Safety Authority (HSA) Ergonomic Risk Assessment Workshops by presenting a case study on this project.

Client Testimonial

"The Project Team was challenged to look beyond the traditional methods and explore opportunities for the development of a new system of work to allow safe installation of the stone cladding. With the introduction of the Lifter/Grab and the manufacture of bespoke cantilever brackets this avoided the need for sustained awkward bending and twisting postures that resulted from the manual installation process. By following the Principals of Prevention, using the MAC Tool and innovative thinking, the stone cladding installation was carried out more efficiently with a significant reduction in ergonomic risk exposure to the benefit of all involved."

Emmet Hynes, Group Health & Safety Manager

Solution development action plan

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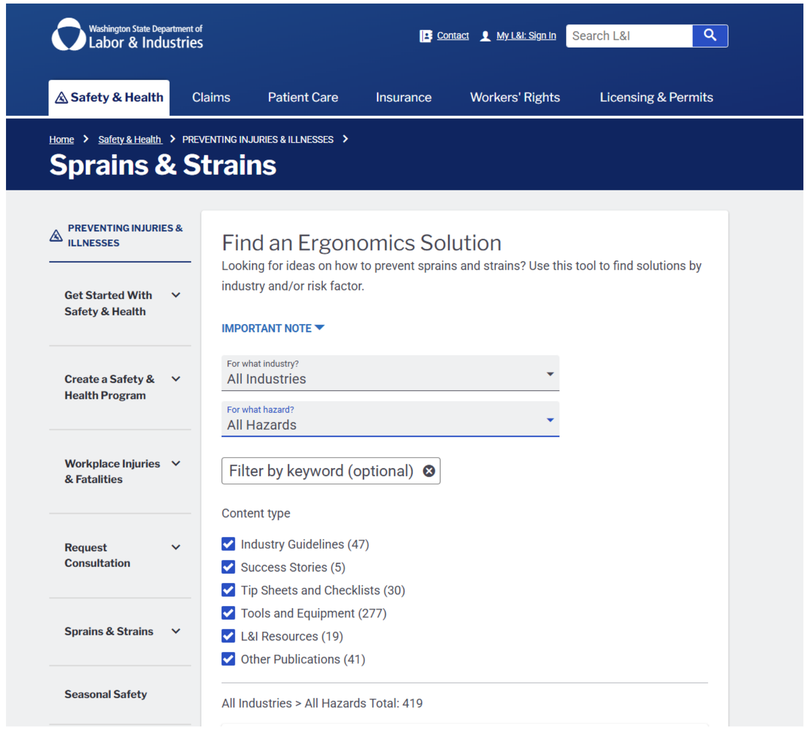
Washington State Department of Labor & Industries

Ergonomic Ideas Bank

(Search: Ergonomic Ideas Bank)



Solution development action plan

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Training is important but it can't overcome:

- a lack of mechanical aids;
- unsuitable loads;
- bad working conditions.

Training should aim to change behaviours.

Solution development action plan

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Training should cover:

- risk factors and how injuries can occur;
- good handling technique;
- appropriate systems of work for the individual's tasks and environment;
- use of mechanical aids;
- practical work to allow the trainer to identify and put right anything the trainee is not doing safely.

Solution development action plan

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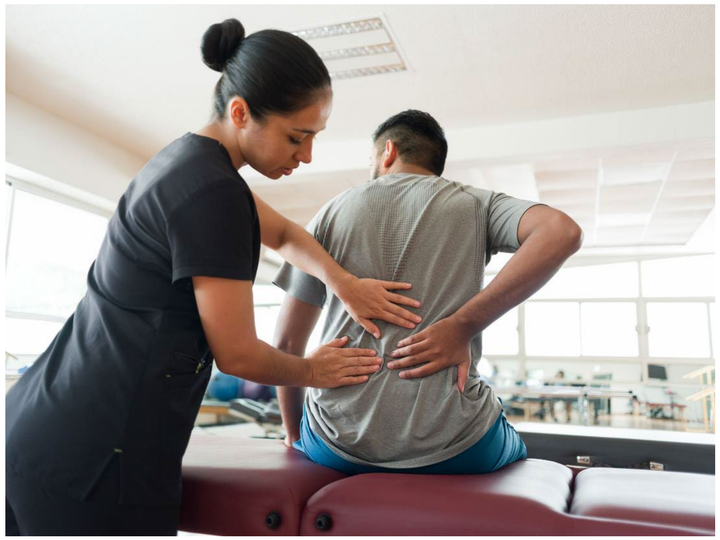
Public Health England

Return on Investment of Interventions for the Prevention and Treatment of Musculoskeletal Conditions



Solution development action plan

https://www.gov.uk/government/publications/musculoskeletal-conditions-return-on-investment-tool

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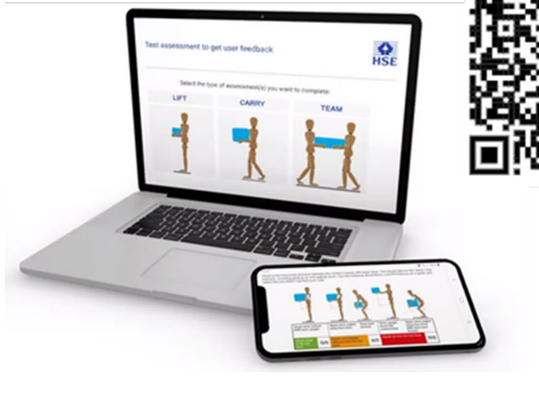
Thank you for your time

HSE Body Map

officialpublisher.tso.co.uk/body-mapping/



Ergonomic Ideas