MANUAL HANDLING IN THE MEAT INDUSTRY

Injuries are a serious problem for both employers and employees. It has a significant impact on the efficiency and productivity of the industry and on the health and well-being of the workforce.

Fortunately, there are ways to reduce these injuries. Based on the experience of meat workplaces, this paper will show how injuries can be prevented.

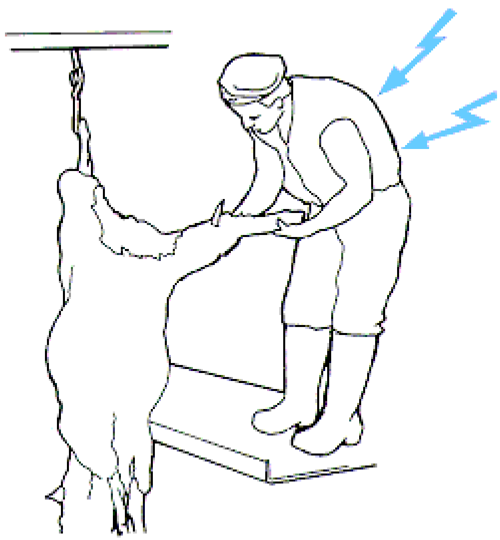
The most frequent type of injury in the meat industry is being struck by an object, such as a knife or carcass, resulting in cuts and bruises. However the number of serious cuts have been reduced with the introduction of safe work procedures and personal protective clothing such as mesh aprons, mesh gloves and forearm guards.

The most costly injuries are caused by overexertion or physical strain while handling loads, and are referred to here as manual handling injuries. These injuries mainly affect the back, neck and arms, but also the hands and fingers.

What are manual handling injuries?
Manual handling injuries are associated with overexertion of physical stress when lifting, carrying, moving or holding an object. Injuries from handling loads are usually sprains and strains to muscles, tendons, ligaments and joints, or bruises and fractures from dropped loads.

It is not only lifting that leads to manual handling injuries. Jobs that involve repetitive movements or working in an awkward position for a long time can lead to cumulative strain. Unlike a knife cut or broken bone, the injury does not occur at one particular moment, but is the cumulative effect of the daily strain and fatigue to muscles and ligaments.

Repetitive bending to lift meat out of deep tubs contributes to back pain.



Legging involves bending forward for long periods of time.

Manual handling is also associated with occupational overuse syndrome (also known as RSI) which refers to a range of conditions characterized by discomfort or persistent pain in muscles, tendons and other soft tissues. Some of these are:

- Carpal tunnel syndrome;
- Epicondylitis; and
- Tenosynovitis.

Here are some examples of manual handling injuries taken from actual meat workplaces.

(a) Pinching and grasping beef heads with his non-knife hand, a slaughterman complained of tingling feelings and pain in his fingers and thumb. The pain was keeping him awake at night, and he was unable to ride his motorbike.
(b) Bending over a boning line, a worker was tossing scraps onto a poorly placed conveyor for hours at a time. His elbow was giving him discomfort which resulted in time lost from work.
(c) Unloading beef quarters weighing between 50 and 100 kilos at a butchers shop, a delivery driver slipped on the edge of the truck and fell heavily, seriously injuring his back.

What causes manual handling injuries?

There are many reasons why a manual handling injury occurs, and some injuries are the combined effect of several risk factors. Manual handling injuries in the meat industry are particularly common to the:

(a) Back and neck;
(b) Arms and shoulders; and
(c) Hands and wrists.

Here are some of the known risk factors.

Risks to back and neck:

(i) Handling heavy loads;
(ii) Frequent and repetitive lifting;
(iii) Handling loads that are difficult or awkward to grip because of their size and shape;
(iv) Awkward postures while lifting, such as twisting, bending, stretching;
(v) Continuous standing for a large part of the working day; and
(vi) Slipping on greasy or wet floors.

Risks to arms and shoulders:

(i) Repetitive movements with the arms raised above shoulder height;
(ii) Over-reaching and awkward shoulder movements combined with load handling or forceful movements;
(iii) Sudden unexpected movements, eg handling live animals, resulting in the jarring of muscles and joints; and
(iv) Static postures, ie holding the body or part of the body in a fixed position for a long time.

Risks to hands and wrists

(i) Frequent and repetitive movements, usually associated with awkward wrist positions while applying force;
(ii) Vibrating knives and saws that damage blood vessels leading to poor circulation and contributing to long term problems in joints and tendons; and
(iii) Cold work environments.

How can manual handling injuries be prevented?

Job redesign is the preferred option for employers to control the risk of manual handling injury. An employer should ensure that, so far as is practicable:

(a) the plant and containers used in the workplace are designed, constructed and maintained so as to be free of risk when handled manually;

(b) work practices involving manual handling are designed, implemented and maintained so as to be free of risk; and

(c) the working environment is designed, constructed and maintained consistent with safe manual handling practices.

Teaching workers to lift correctly is not effective on its own at reducing manual handling injuries. Training in good handling techniques is useful for new employees and to remind more experienced handlers about how to avoid poor body postures and how to control the load.

However most manual handling injuries are not caused by bad lifting technique but rather by bad design of the workplace. The causes of injury are usually a combination of many risk factors, such as the length of time spent handling loads or the height to which the load has to be lifted or the awkward size and shape of the load. Therefore manual handling injuries can best be prevented by better design of the workplace, the equipment and the job itself, combined with training in specific manual handling skills.

So how should employers and employees go about reducing manual handling injuries in their workplace? Start by finding out where the manual handling injuries are happening and why. Then decide what can be done to reduce the likelihood of these injuries. Put the changes in place and check that they are working successfully. This approach to safe manual handling is known as risk identification, assessment, control and evaluation.

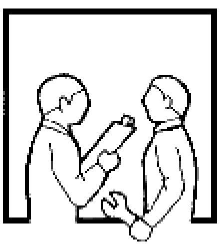
The recommended approach for safe manual handling

Step 1. Risk Identification

Where are manual handling injuries happening in the workplace?

- Look at injury records
- Talk to employees and their safety and health representatives

Watch the work in progress

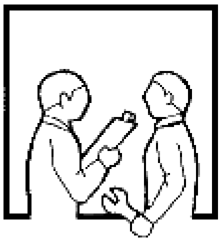


Step 2. Risk Assessment

What is causing these manual handling injuries?

Look at:

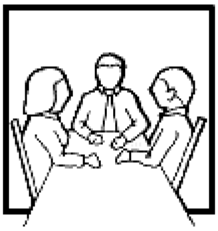
- Actions and movements used
- Layout of the workplace
- Position of the body while working
- How often, and for how long, manual handling is done
- Where the load is positioned and how far it has to be moved
- Weights and forces involved
- Characteristics of the loads and equipment
- Organisation of the work
- Work environment
- Skills, experience and age of the workers
- Type of clothing worn
- Special needs of workers



Step 3. Risk Control

What changes can be made to prevent these manual handling injuries?

- Redesign the job
- Provide mechanical handling equipment
- Provide training in manual handling skills



Step 4. Evaluation of the Controls

- Are the changes made working successfully?
- Check that the changes:
- Are used correctly
- Are not causing further problems
- Do help reduce injuries

Step 1. Find out where the manual handling injuries are happening

Find out which jobs are causing manual handling injuries by:
(i) Looking at injury records;
(ii) Talking to employees and their safety and health representatives about their jobs; and
(iii) Watching the work in progress.

Look at injury records
Looking at injury records helps find out where and in what jobs manual handling injuries have happened. it is often useful to look at injuries per number of employees or hours worked. Then compare the frequency of injuries between different departments, eg the slaughter floor and the boning room. The insurance company should be able to provide this information.

Make sure the organisation's injury report contains enough information to help identify where injuries are happening. All injuries, near misses and accidents, including those that only result in damage to equipment, should be recorded.

Look at:

(a) The area of the workplace where the injury happened, eg in the boning area in the backshop floor;
(b) The occupation or job title of the injured worker, eg counter assistant on stairs;
(c) The part of the body injured, eg back or neck;
(d) The nature of the injury, eg strain or cut;
(e) How the injury happened, eg overexertion when lifting a carcass or slip when pushing a barrow; and
(f) The type of equipment or machine involved.

Talk to employees and their safety and health representatives
Talk to the workers about their job, as they are most likely to know the risks and hazards. Find out which jobs are the most tiring or uncomfortable and are the most disliked. These jobs may most need improvements.
Encourage workers to report pain or discomfort at work. Take all employees' complaints seriously and follow up the reasons why there is a problem. If pain is reported before a serious injury happens, the workplace can be made safe and the worker's job and personal life will not suffer.

Watch the work in progress
Watch the jobs that have caused manual handling injuries or the ones that workers find most tiring and uncomfortable. Remember that a combination of many risk factors from each task can lead to cumulative strain injuries.

Employees often improvise changes to their workplace when they are having problems. Look for stacked mats or flattened cartons, used to stand on, or tool handles padded with layers of tape. These are usually signs that something is wrong.

Watch for employees who are obviously uncomfortable, for example people shaking or rubbing their hands, stretching their back as if to relieve tension, or wearing a support bandage on the wrist or elbow. Find out why they are uncomfortable.

Step 2. Find out what is causing these manual handling injuries

Now decide which jobs are most in need of change and find out what is causing the injuries. To decide which jobs are most in need of assessment, look at:

(i) The number of injuries related to each job and how serious those injuries have been;
(ii) The number of risk factors found in that job; and
(iii) How often the task is done.

When looking for the causes of manual handling injuries think about:

- The actions and movements used;
- The layout of the workplace;
- The position of the worker's body while working;
- How often, and for how long, manual handling is done;
- Where the load is positioned and how far it has to be moved;
- The weights and forces involved;
- The characteristics of the loads and equipment;
- The way the work is organised;
- The work environment;
- Skills, experience and age of the workers;
- Type of clothing worn; and
- Special needs of the workers.
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Step 3. Decide what changes can be made to prevent manual handling injuries.

Now decide what changes can be made to reduce the risks found in Steps 1 and 2. Discuss any planned changes with the supervisors, elected safety and health representatives, the safety and health committee and the workers affected by the changes. Involve them in comparing and trying out short-listed options before the final decision and implementation. Make use of their experience and gain their co-operation in making the changes.

Reducing the risk of manual handling injuries can best be done by a combination of:

(a) Redesigning the job
The aim of job redesign is to make sure that the work content, the workplace layout and the way in which the job is done are all arranged to reduce the risk of manual handling injury. It includes the design of objects or tools being handled during a task, the work height at which the task is done, and the movements required to carry out the task.

(b) Providing mechanical handling equipment
Providing mechanical handling equipment with the necessary training can lower the risk of injury by reducing the force required to do the job.

(c) Providing training in manual handling skills
Where the previous controls have been unable to reduce a significant risk, then the worker needs training in the necessary manual handling skills for that task. Training is also needed when a job is redesigned or new mechanical handling equipment is introduced, to make sure the employees know the correct procedures and actions to carry out the job safely.

There will often be a number of solutions to a particular problem and some will be easier to carry out than others. Some changes may be short term or temporary measures to reduce a risk, but the long term aim should be to eliminate the problem by mechanisation or job redesign.

Step 4. Check that the changes made are working successfully

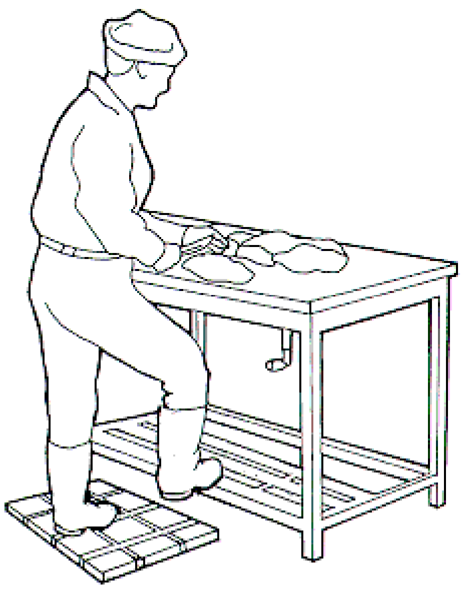
Simply changing the workplace will not stop injuries from happening. The changes need to be evaluated to make sure they:
(i) Are being used correctly;
(ii) Are not causing further problems; and
(iii) Do help reduce manual handling injuries.

Job improvements are not always straight forward, and a period of trial and error is often needed to find a good modification.

Keep a list of all the job improvements that have been made and provide feedback to workers on progress made. Also keep track of the number of lost time injuries and monitor the organisation's progress over time. The number of injuries may go **up** at first, simply because the injury prevention program **encourages** employees to report problems. However the number of serious injuries and total working days lost should go down.

Examples of risk control in meat workplaces
This section describes how each of the risk control options of job redesign, mechanical handling equipment and training apply to the meat industry. The most common problems with the design of the job and the workplace are described, followed by ways they can be improved. Examples of mechanical handling equipment used in the meat industry and the type of training needed in manual handling skills are also described.

Job redesign

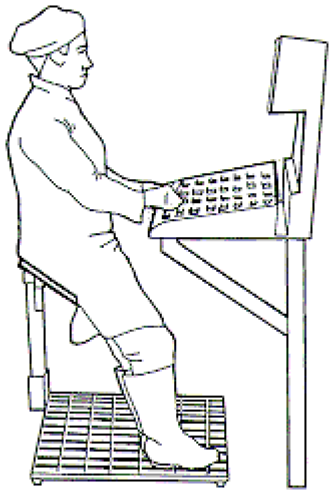


Standing at work
Many jobs in meat workplaces involve continuous standing, eg many workers in the boning room and in the offal room are standing, largely in one place, all day long. Continuous standing is a common source of discomfort and tiredness. It can cause sore feet, swelling of the legs, low back pain, and stiffness in the neck and shoulders.

To reduce discomfort, the table where the person is standing should have a footrest so they can rest alternate legs. This encourages good posture and relaxes the lower back muscles. The footrest should be large enough for the whole foot. Anti-fatigue matting should also be provided to reduce the effect of standing on a cold, hard floor all day.

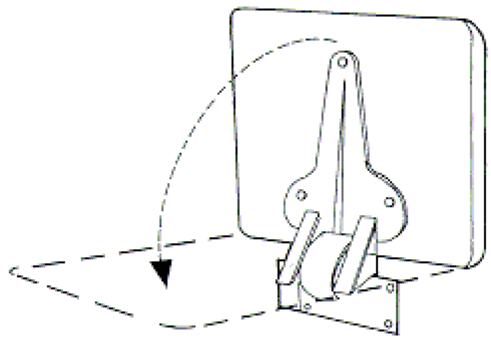
Providing a footrest and anti-fatigue matting can reduce discomfort from standing.

Sitting at work
Many standing jobs in a meatworks could be done sitting down but normal office chairs are not suitable. A better idea is a sit-stand stool that allows workers to transfer about two-thirds of their body weight onto a "butt-rest" while their feet stay on the floor. They can then alternate between sitting and standing while they work. A sit-stand stool could be used by slicers, tally clerks, carton makers and other workers where their job is largely in one place.



A sit-stand stool allows workers to take the weight off their feet occasionally.

Where space is limited and the worker must be able to move freely, a butt-rest that folds out of the way may be appropriate. The rest can be used occasionally between carcasses and when the chain is stopped, reducing the effects of continuous standing.

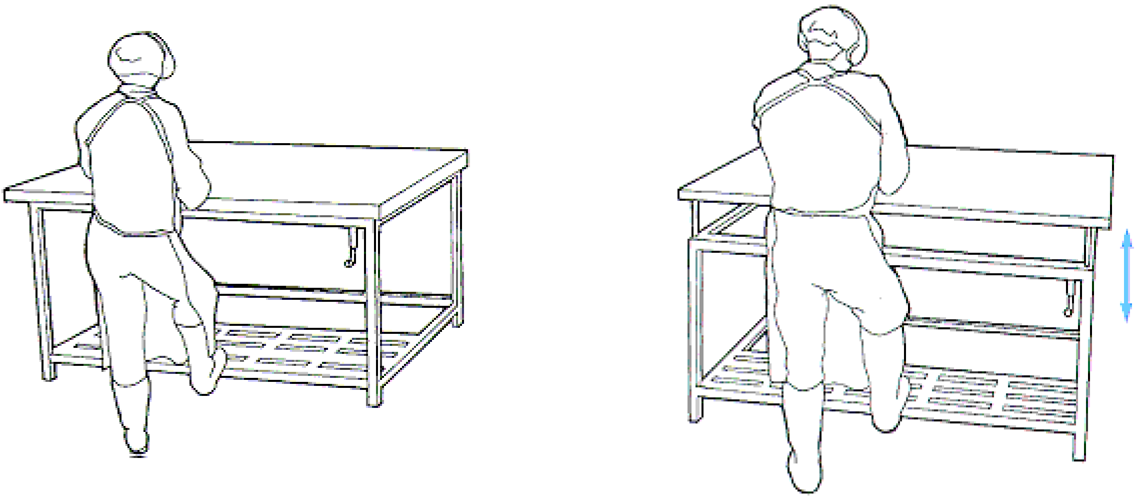


Work height
The work height needs to be right for the job whether it's the height of the carcass on the chain or the height of a table. the layout of the workplace should allow workers to do the majority of their tasks at about waist height and within easy reach. Tasks requiring considerable force or using the body for leverage, such as boning out shoulder blades, may need a slightly lower work height.

On the slaughter floor, the aim is to keep the section of carcass to be worked on between mid-thigh and chest height to the worker. Different rail or chain heights in different areas of the slaughter floor enable the height of the carcass to suit the task. Alternatively the floor level or platform height along the chain can be at the right height for the task. Shackle and hook length can also be varied to suit different carcass sizes. For example, baby beef can have a longer shackle length than big bulls so the carcass head remains at about waist height for workers in the head removal area. Care should be taken in adjusting hook length as longer hooks result in more pronounced movements of the carcass.

Providing the right work height can also improve product quality and productivity. For example, workers trimming fat from beef carcasses above head height are unable to see what they are doing and may leave excess fat on the carcass or trim off excess meat leading to wastage or lower product quality.
Table heights should be designed so workers can keep their arms at about normal elbow position, with the shoulders relaxed and the elbows close to the body. Workers come in all shapes and sizes, with great differences in height and reach. The employer is required to take account of the safety of each employee, and not simply design a workplace which might be safe for an average worker.

For example, many workers of different heights are doing the same task at the same boning table. The tall worker has to stoop and the short worker has to work with arms and shoulders raised. Over a period of time, these awkward postures will lead to discomfort and eventually injury. To prevent injury, workers need to be able to adjust their own work surface to suit their height. Individually adjustable work surfaces, and adjustable work stands and table tops are ways of designing the workplace to the worker.

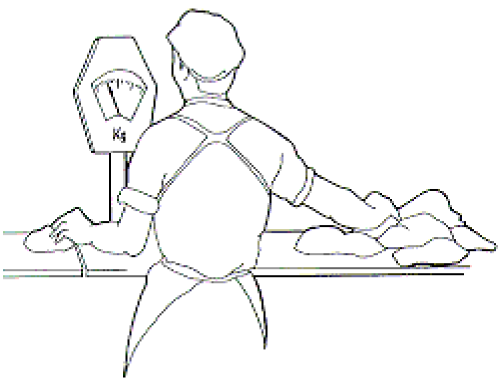


Workers can adjust the table height to suit their own height.

A temporary solution may be to match workers by height and place similar height workers on the same table and raise or lower tables accordingly. This should only be a short term solution.

Position of equipment
Badly positioned controls and equipment that require frequent reaching at arm's length or reaching above head height can lead to back and shoulder injury.

For example, the control lever to lower the carcass in the evisceration area of the beef rail is often placed above and behind the worker, resulting in an awkward and uncomfortable working position. Controls that are used frequently or in emergencies, such as stop buttons on the chain, should be placed in front of the worker and within easy reach.

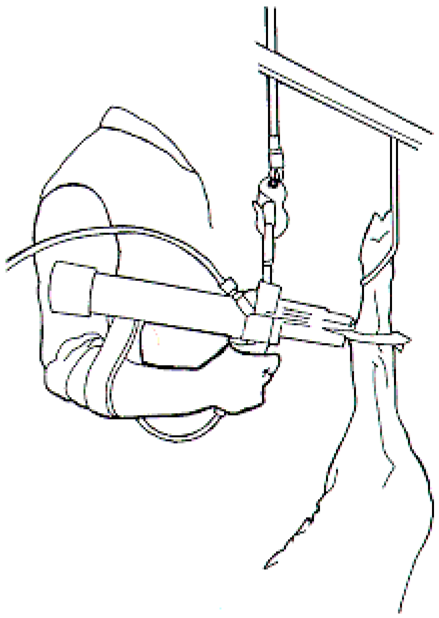


Suspended scales on the packing table are often positioned at shoulder height in the middle of the table, resulting in frequent lifting of heavy cuts of meat at arm's length. Weighing scales should be at the same height as the wrapping and packing table and within easy reach so that meat can be slid between work areas and not lifted.

Neck problems are often associated with poorly designed and positioned displays, such as the carcass weight display. These should be positioned at a suitable height, angle and distance to reduce neck strain and with a large enough display to prevent eye strain.

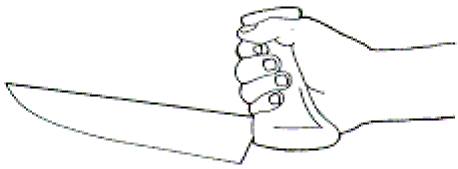
Tool design
The design of the handtools and the way in which they are used is important in reducing manual handling injuries, particularly cumulative-type injuries to the hand, wrist and forearm. Repetitive knife work is a risk factor in strain injuries to the wrist and forearm.

Reducing this risk requires a good knife sharpening facility, employee training program and supervision to ensure that knives are kept sharp. This will reduce the force needed to make a cut, reducing the strain on the worker's wrist and hand. To prevent cuts while knife sharpening, oilstones should be securely fastened to a fixed base and be adjustable to a suitable height. The handle on all tools, including knives, should provide a good grip and be the right size for the worker's hand. Air knives in particular have a large grip and are fairly heavy which may lead to hand and wrist problems for smaller workers. People's hand sizes vary enormously and suppliers of meat knives should design handles to suit different hand sizes. They should also accommodate left and right-handed users.

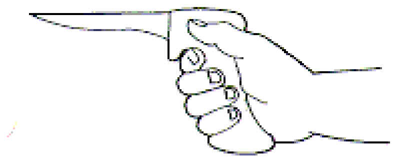


The repetitive use of the trigger or push button on mechanical hock cutters, air knives and saws can be a source of muscle fatigue. A worker using a hock cutter can do as many as 19 cuts per minute and press the finger button over 8000 times during the working day. Triggers that require reasonable force and can be activated by the middle part of the finger or fingers will minimise muscle fatigue.

Hand tools should be designed to keep the hand and wrist as straight as possible, without twisting or bending. For example, a hock cutter with a pistol grip ensures a good wrist and forearm position.



Alternative knife designs are available that allow more comfortable wrist positions for various cutting tasks. A knife designed to be used with a straight wrist is recommended.



Vibration from hand tools can damage blood vessels, causing what is known as White Finger, and resulting in numbness and pain in affected fingers. Cold workplaces can make the symptoms worse. Vibration can also lead to cumulative problems in joints and tendons.
To reduce the risk of these injuries employers should ensure regular maintenance of hand tools and encourage reporting of increased vibration in any existing tool. When buying new equipment, ask the supplier for information on the vibration level of the tool and select the model with the least vibration.

Suspending power tools from a balancer reduces the force needed to operate and control the tool. For example, suspending the stun gun (concussion stunner) above the knocking box by a counter balance reduces the weight held by the operator. Lifting the gun to replace the cartridge and striking the stunner against the animal's head both require less force.

This is particularly important given that difficult positions generally adopted by this worker include frequent bending, often with arms out-stretched and feet in an unstable position. Good placement and regular maintenance of the balancer is essential.

When buying new handtools or equipment ensure that the purchasing specifications include how the equipment will be used and the injury risks that must be minimised. Involve safety and health representatives and workers who use the equipment in selecting new tools since they are familiar with the job and the tools, and know the important features to look for.

Work environment
Changes to the work environment can reduce the risks of manual handling injuries. Blood and grease on the floor presents a serious slip hazard, especially when the job involves exerting force, such as pulling the pelt off a sheep or pushing carcasses along the rail.

Providing non-slip surfaces and ensuring regular cleaning and maintenance of floor surfaces will reduce the risk. Providing appropriate non-slip footwear and boot cleaning facilities is also important.

Inadequate lighting in meat workplaces can lead to postural strain injuries particularly in precision jobs and inspection tasks. Leaning and bending forward to get a good enough view of something will gradually lead to muscle discomfort or strain.

Work organisation
An incentive system of work may contribute to the risk of manual handling injuries. Work which is machine-paced and paid by production can result in excessive demands being made on workers by the employer (to maximise production) and by other team members (to maximise earnings), leading to an increased risk of injury. High work rates with repetitive tasks may not allow adequate recovery periods for heavily loaded muscle groups, resulting in cumulative-type manual handling injuries.

This system of work also encourages workers to complete their day's work quickly and leave the meat workplaces at the earliest possible time. This discourages the learning of new skills that may slow the worker down at first, and discourages workers taking part in any activities that are not directly linked to production, such as training sessions or safety and health meetings.
It is beyond the scope of this paper to consider alternatives to the tally system of work, but there are a number of ways that the work can be organised to reduce the risk of injury.
Allow adequate space at each work area for cuts of meat that are sill to be processed to be kept until the worker is ready (referred to as a "buffer zone"). The stored items must not interfere with the workpace needed to do the job.

Allow adequate space along the chain for each worker so they can work ahead of or behind their regular work position. This provides some flexibility and variation in pace for each worker.
Provide adequate supplies of materials needed for the job, such as legging paper, strings, carton liners, so that workers do not have to leave their work area and drop behind in production.

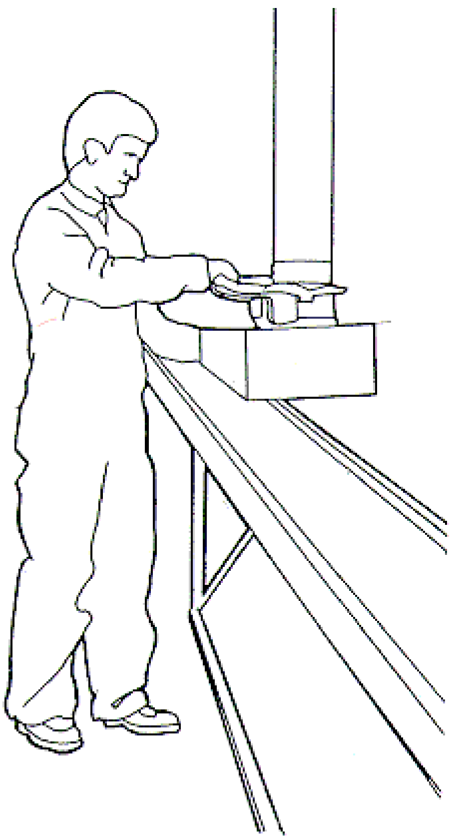
Make provisions for an operator to be able to help balance out any problems if the job demands are uneven, or individuals are not fully skilled in the task, or workers need to take a short break.

Provide adequate workers on the production line to achieve the required work speed and product quality. This should be discussed between employer and employee representatives. Provide a variety of tasks over a work shift, by moving workers between different jobs (job rotation) or increasing the tasks that make up a job (job enlargement). This should aim to spread the load over as many muscle groups as possible and to move people from heavy to lighter jobs during the shift.

Allow adequate breaks for muscles to relax and prevent build up of fatigue. Allow new or inexperienced workers, or people returning to work after more than two weeks' off, time to gradually become accustomed to the work. This gives their muscles and joints a chance to strengthen-up for that particular job.

Provide supervision to reinforce good techniques and work practices designed to reduce the risk of injury.

Mechanical handling equipment



Mechanical handling equipment can reduce the force needed to lift, carry or move objects. It needs to be easy to use, well designed to suit the load, properly located in relation to the work area, and readily available.

Examples of mechanical handling equipment are:
(i) Roller conveyors to move cartons in boning room, freezers and loading areas;

(ii) Mechanical stackers for loading cartons into freezers;

(iii) Screw conveyors and gravity chutes to remove trimmings and inedible products from the slaughter floor or boning room;

(iv) Mechanical hoists to empty tubs into machines;

(v) Mechanical hide pullers, hock and head cutters to reduce the force needed to do these tasks; and

(vi) Vacuum assisted lifter to lift and stack cartons on to pallets.

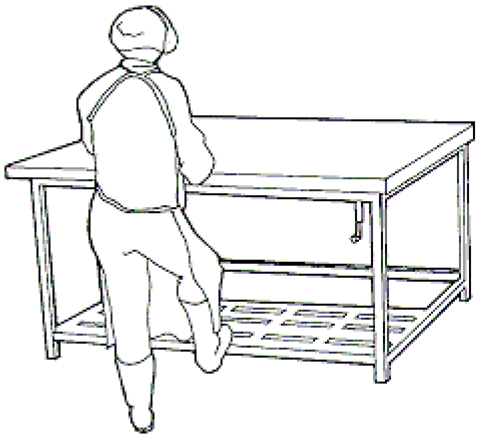
Boning room (beef, lamb and pork)

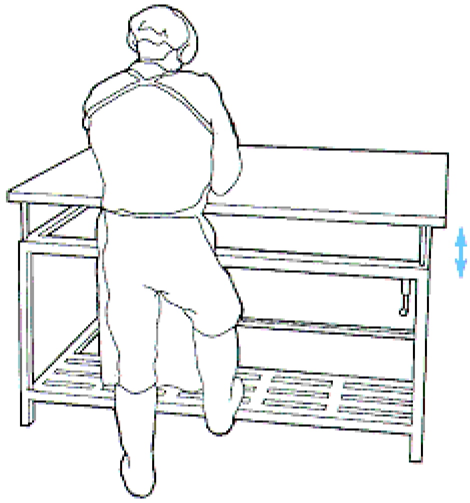
Boning on the chain or rail

Risk factors
- Pushing carcasses along the rail;
- Reaching above shoulder height and below mid-thigh to remove various cuts;
- One-handed carrying of removed cuts of meat;
- Considerable force required with knife and sustained grasp with non-knife hand to stabilize carcass.

Control ideas

- Ensure rail surfaces are smooth so carcasses slide easily;
- Vary the rail height or the platform height at each work position so the area of the carcass being worked on is between shoulder and mid-thigh height;
- Reduce the distance that cuts of meat are carried once cut from the hanging carcass;
- Consider designing a suitable hook grasp for the non-knife hand to reduce pinching and grasping movements;
- Ensure adequate training and supervision in keeping a knife sharp;
- Monitor the chilling procedures to ensure that the product temperatures do not exceed the statutory requirements thereby minimising the cutting forces needed for boning and slicing chilled meat;
- Provide particular skill training to reduce awkward movements.





Boning and slicing on the table also applies to trimming and sorting offal

Risk factors

- Weight of cuts of meat that are handled;
- One-handed lifting and carrying of cuts of meat;
- Forward stooping over tables;
- Considerable forward bending of the neck for long periods;
- Repetitive throwing of trimmings, often behind or across the body or above head height;
- Repetitive knife movements, often forceful and with awkward wrist positions;
- Continuous standing for long periods;
- Working in a cold environment.

Control ideas

- Organise layout of boners and slicers workplace for easy transfer of product between tables without unnecessary lifting and over-reaching;
- Provide height adjustable tables to suit the height of the worker and the task being done;
- Provide a table surface that can be sloped towards the worker to reduce neck bending; cuts of meat can be secured on metal pegs at the top edge of the table;
- Provide anti-fatigue mats to reduce the effect of standing on a cold, hard floor for long periods;
- Provide a sit-stand stool and footrest to enable workers to change position during the day;
- Look at alternative knife designs to reduce wrist and arm strain;

- Position tubs for trimmings and inedible products within easy reach and positioned in front of or beside the worker so it does not involve throwing and twisting.

Packing

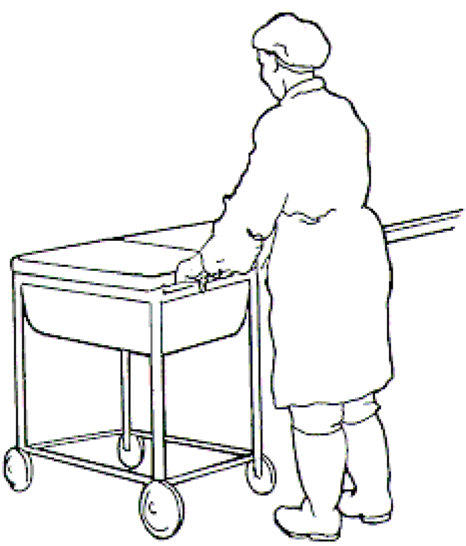
Risk factors

Height of the packing tables is often too high so workers are reaching over the sides of the cartons and working with their arms raised

- Rapid, repetitive movements that are paced by the necessity to keep up with the work speed of boners and slicers;
- Pushing tubs of meat and carrying cartons between packing areas, full cartons weigh up to 27.2 kilos;
- Repetitive grasping, turning, lifting and placing of large cuts of meat when wrapping or bagging;
- Forward reaching with arms out-stretched to reach meat from centre of packing table or to use scales to weigh meat before packing;
- Repetitive bending to lift large cuts of meat from deep tubs and trolleys.

Control ideas

- Design packers' work area to minimise bending and reaching, using the right height and width of table and a sloped surface so cartons are tilted towards packers;
- Provide bagging horns to reduce the amount of one-handed lifting and handling when bagging cuts of meat;
- Ensure enough space for packers to position cartons lengthways in front of them while packing to reduce forward reaching;
- Encourage packers to fold the sides of cartons down before packing so they are not lifting cuts of meat over the high sides;



- Provide integrated roller conveyors to transport packed cartons between work areas and organise the workflow to minimise unnecessary handling;
- Provide shallow trolleys at about table height for transferring tubs of meat and cartons to other packing areas;
- Include weighing scales in the packing table surface and within easy reach;

- Design each packing and wrapping task to minimise the number of movements involved and the force required and teach these techniques to all workers:
- Consider alternative layouts for packing areas that include from the boning and slicing areas to all packing areas, and the use of buffer areas and revolving tables.

Stacking cartons on pallets, stillages and freezer racks

Risk factors

- Repetitive bending to floor level and reaching up above head height to load and unload cartons from stillages and freezer racks;
- Multiple handling of product from boning room to stillage, from stillage to pallet, from pallet to delivery truck, from truck to customer;
- Bending, reaching and twisting to place cartons on far side of pallet;
- Lack of toe space under pallet increases reaching involved;
- Working in low temperatures when stacking cartons in freezers.
-

Control ideas

- Provide mechanical stacker to load cartons into freezers;
- Limit the shelves used on stillages to those accessible between knee and shoulder height;
- Provide pallet lifter to maintain top of pallet at waist height while loading cartons;
- Provide pallet turner so that pallet can be filled from one position without over-reaching;
- Provide supervised warm-up time at start of job to ensure joints and muscles are flexible and prepared for load handling;
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- Provide appropriate protective clothing that does not restrict movement;
- Allow adequate breaks to warm up;
- Provide roller conveyors to minimise distance cartons are carried to pallets and stillages;
- Provide a vacuum lifter to handle cartons mechanically.

Labouring (beef, mutton and pork)

Transport of slides, gambrels and rollers

Risk factors

- Considerable weight of full tubs;
- Distance to be moved to and from slaughter floor;
- Slippery floor, changes in floor height, confined space;
- Lifting and carrying trays of hooks and skids from the delivery truck.

Control ideas

- Provide automatic transfer of rollers from the slaughter floor to the cleaning area by overhead return rail, by gravity or mechanical means;
- Cut down the size of the tubs to reduce the weight of a full tub;
- Provide a mechanical handling aid such as a powered tug to move full tubs or an overhead hoist to lift the tubs onto a custom-built trolley;

Ensure adequate space in aisles and walkways to manouevre trolleys.

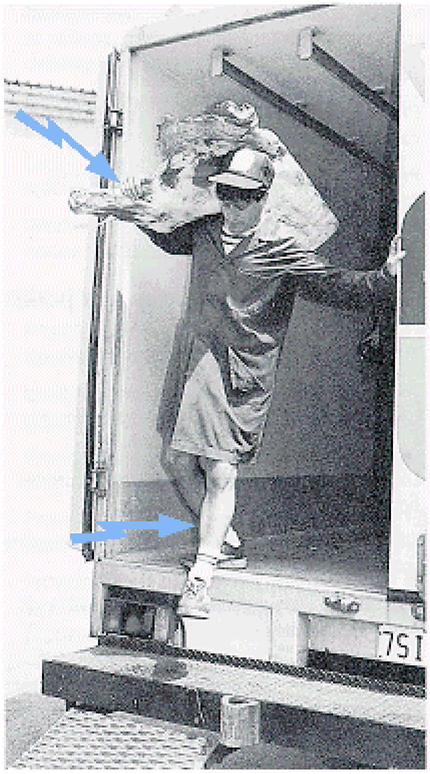
Handling trimmings and inedible material in tubs and barrows

Risk factors
- Carrying heavy trays between work areas, across slippery floors;
- Bending and lifting heavy tubs from the floor;
- Lifting and carrying tubs to empty them into chutes.

Control ideas
- Provide tubs / barrows that are easy to use, with large wheels, handles with good grip

Load out and delivery of beef quarters and other products

Risk factors
- Frequent manual handling when quartering beef carcasses, loading delivery trucks and making deliveries;
- Heavy loads: beef quarters weight from 50 to 125 kilos;
- Large, awkward items that are difficult to grasp;
- Reaching above shoulder height to remove or attach meat hook while carrying load;
- Carrying quarter on one shoulder with neck strained sideways;
- Confined space in trucks;
- Slippery floors and ramps, and uneven, poorly lit floor surfaces;
- Stepping down from trucks at loading docks;
- Driving then lifting without warming up stiff back muscles.



Control ideas
- Ensure that the section of rail where the hindquarter is lowered after quartering links up directly with the rail to the next processing area to reduce the manual handling of beef quarters;
- Provide gravity rails to load trucks, with an extension of the rail from the loading dock that interlocks with the central rail in the truck interior;
- Provide rails along the length of the truck with gates to enable transfer from central rail, so that carcasses can be moved between rails without lifting; rail dividers may be necessary to stop carcasses moving forward when the truck brakes;
- Minimise hook changes as far as possible, eg only change the hook when the carcass is delivered to the customer;
- Provide dock leveller or ramp for truck loading to reduce the chance of trips and falls due to height differences and gaps between truck and dock;
- Reduce size of product units where possible through negotiation with the customers;
- Provide non-slip finish in truck interior and ensure regular cleaning of truck tray and ramp to remove fat and blood;
- Provide non-slip shoes, gloves and overalls so the load can be held close to the body;
- Provide adequate lighting at the load out area and in the trucks to reduce the risk of trips and falls;
- Negotiate with customers to organise their facilities so they reduce the manual handling of products being delivered;
- Ensure drivers' timetables allow time for rest breaks during the day;
- Provide training in specific handling skills and arrange for new staff to go out with an experienced delivery driver to learn the job.

Loading carcasses and cartons out of chillers and freezers and in to shipping containers

Risk factors

- Repetitive movements and unnecessary double handling;
- Pushing carcasses along rail requiring considerable force;
- Extended reach to operate rail gates, sometimes using long-handled gate hooks that are difficult to manoeuvre;
- Working in cold environment;
- Difficulty grasping frozen carcasses of an awkward shape and with a cold surface;
- Reaching with arms out-stretched to pack carcasses into top layer of container, often requiring considerable force to push carcasses into gaps.

Control ideas

- Ensure regular maintenance of rails to ensure smooth and free movement of skids;
- Provide gates on rails that are easily operated by controls accessible from below shoulder height;
- Organise bulk loading of container, such as palletised cartons or pallets of stretch-wrapped carcasses loaded by fork lift;
- Provide portable conveyor at waist height to transfer carcasses from the store to the actual row of product being stacked in the container;
- Provide job rotation between tasks that involve different muscle groups;
- Use fork lift truck or scissor-lift platform to keep carcasses at appropriate height for loading manually;
- Provide stand inside container for workers to reach top level of stack;
- Provide appropriate clothing so the load can be held close to the body.

Summary

This paper highlights the importance of preventing manual handling injuries. The costs of these injuries to productivity and efficiency, and in pain and in pain and suffering to the injured workers, is unacceptably high. Employers have a moral and legal obligation to provide a safe workplace and to provide rehabilitation for injured workers.

Manual handling injuries can be reduced by identifying where the injuries occur, assessing the risks that contribute to these injuries and then applying controls.

Examples are provided of control measures that can be used for specific tasks associated with manual handling injuries. This is not a complete list of problems and solutions. Each meat workplaces needs to identify, assess and control the specific injury problems in their own organisation. Each situation will be different and will need the consultation and co-operation of the workers involved.

Injury prevention needs to be an ongoing process of risk identification, assessment, control and evaluation. Simple control measures can have a significant impact on reducing injuries and improving workplace safety. Many meat workplaces are already experiencing the productivity and cost benefits of improved safety and health.

Eòrpa agus Alba
ag obair còmhla

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