

Work Procedure / Instruction

Procedure number: QMS009

Title: Hazardous Manual Tasks

1. Objectives:

This procedure outlines how Bunbury Harvey Regional Council (BHRC) will comply with its legal requirement under the Occupational Safety and Health Act 1984 (the Act) and Regulations 1996 (the Regulations) to identify assess and control hazardous manual tasks.

This procedure applies to all hazardous manual activities undertaken by all workers and ensures that there is a consistent approach across all sites maintained by BHRC.

2. Guidelines:

The OSH Act states that:

- *An employer shall, so far as is practicable, provide and maintain a working environment in which the employees are not exposed to hazards.*
- *An employee shall take reasonable care to ensure his or her own safety and health at work.*

Regulations 3.1(a) and 3.4(2) (a) of the Regulations requires the employer, the main contractor or a self-employed person to identify each hazard that is likely to arise from manual tasks at the workplace, as far as is practicable.

Definitions:

<p>Hazardous Manual task</p>	<p>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 involving one or more of the following:</p> <ul style="list-style-type: none"> • Repetitive or sustained force • High or sudden force • Repetitive movement • Sustained or awkward posture • Exposure to vibration. <p>These factors directly stress the body and can lead to injury.</p>
<p>Musculoskeletal disorders (MSD)</p>	<p>A musculoskeletal disorder means an injury to, or a disease of, the musculoskeletal system, whether occurring suddenly or over time. It does not include an injury caused by crushing, entrapment (such as fractures and dislocations) or cutting resulting from the mechanical operation of plant. MSD may include conditions such as:</p> <ul style="list-style-type: none"> • Sprains and strains of muscles, ligaments and tendons • Back injuries, including damage to the muscles, tendons, ligaments, spinal discs, nerves, joints and bones • Joint and bone injuries or degeneration, including injuries to the shoulder, elbow, wrist, hip, knee, ankle, hands and feet • Nerve injuries or compression (e.g. carpal tunnel syndrome) • Muscular and vascular disorders as a result of hand-arm vibration • Soft tissue hernias • Chronic pain.

3. Procedure:

The risk management process for manual tasks involves the identification of hazards, assessing the risks, implementation of controls and review of control measures.



3.1 Identify Hazardous manual tasks

The first step in managing risks from carrying out manual tasks is to identify those tasks that have the potential to cause musculoskeletal disorders (MSD). Hazardous manual tasks are ones that involve involving one or more of the following:

- Repetitive or sustained force
- Repetitive movement
- Sustained or awkward posture
- Exposure to vibration
- High or sudden force

Hazards that arise from manual tasks generally involve interaction between a worker and the:

- Work tasks and how they are performed
- Tools, equipment and objects handled
- Physical work environment

How to identify hazardous manual tasks

Manual task hazards can be identified by:

- Reviewing the duties in position descriptions to identify manual task risks.
- Consulting with workers who are involved in manual tasks to find out what hazards are involved. For example, you could ask workers to identify tasks that:
 - Are difficult to do (or appear harder than they should be)
 - Are very tiring (muscle fatigue reduces work capacity)
 - Are awkward or dangerous (for example, difficulty controlling loads)
 - Cause discomfort.
- Analysing Health and Safety records and Workers Compensation statistics to find out the number of manual task injuries, the cause of these injuries and where they are coming from

- Observe how workplace equipment is set up, and the associated workflows between different areas
- Observe workers performing manual tasks, particularly tasks that require awkward postures, movements and repetitive movements
- Perform Workplace Inspections to observe how tools, materials and equipment are stored
- Investigating manual task incidents to identify what caused the injury

3.2 Assessing the Risk

A risk assessment allows you to examine the characteristics of a manual task in more detail.

You should carry out a risk assessment for any manual tasks that you have identified as being hazardous, unless the risk is well-known and you know how to control it.

A risk assessment can help you determine:

- Which postures, movements and forces of the task pose a risk?
- Where during the task they pose a risk?
- Why they are occurring?
- What needs to be fixed?

When conducting a risk assessment of hazardous manual tasks the following factors must be taken into consideration.

- The posture of the worker
- The forces exerted by the worker and any forces exerted on the worker by the object
- Speed of movements by the worker
- Exposure of the worker to vibration
- The duration and frequency of the task

You must also take into consideration the possible sources of the risks including:

- The layout or design of the work area.
(Is the area set up to prevent awkward postures?)
- The work environment.
(Sources of risk in a work environment include temperature, humidity, floor surfaces, lighting and obstructions.)
- Consider the nature, size, weight or number of things handled including any tools used
- Work organisation and the system of work.
(The pace of the work and time constraints)

These sources of risk can also make the task more difficult to perform and therefore increase the risk of MSD.

3.3 Controlling the risks

You must aim to eliminate any hazardous manual tasks and any associated risks. If it is not reasonably practicable to eliminate the risk then controls must be put in place to minimise the risk.

Control measures should be aimed at eliminating or minimising the frequency, magnitude and duration of movements, forces and postures by changing:

- The source of risk
- The work area, tool, load, environment
- Method of handling and/or the way work is organised.

This can be done by using the Hierarchy of Control.

Hierarchy of control		Examples of control measures
Level 1	Elimination	<ul style="list-style-type: none"> Automate the manual task Deliver goods directly to the point of use to eliminate multiple handling
Level 2	Substitution	<ul style="list-style-type: none"> Replace heavy items with those that are lighter, smaller and/or easier to handle Replace hand tools with power tools to reduce the level of force required to do the task
	Isolation	<ul style="list-style-type: none"> Isolate vibrating machinery from the user, for example by providing fully independent seating on mobile plant
Level 3	Engineering	<ul style="list-style-type: none"> Use mechanical lifting aids Provide workstations that are height adjustable
Level 4	Administrative	<ul style="list-style-type: none"> Rotate workers between different tasks Train workers to use control measures implemented when carrying out normal tasks
Level 5	PPE	<ul style="list-style-type: none"> Heat resistant gloves for handling hot items Shock absorbent shoes for work on hard concrete floors Protective eyewear and/or masks

4. Training

Training in the type of control measures implemented should be provided during induction into a new job and as part of on-going training needs. Training should be provided to:

- Workers carrying out the task, supervising or managing hazardous manual tasks

The training should include information on:

- Manual task risk management, including the characteristics of hazardous manual tasks
- Specific manual task risks and the measures in place to control them
- How to perform manual tasks safely, including the use of mechanical aids, tools, and equipment and safe work procedures
- How to report a manual task risk or issue.

5. Review controls

Control measures that have been implemented must be reviewed and, if necessary, revised to make sure they work as planned and to maintain a work environment that is without risks to health and safety.

Control measures may be reviewed using the same methods as the initial hazard identification step. Consult your workers involved in the manual task and their health and safety representatives and consider the following:

- Are the control measures working effectively in both their design and operation, without creating new risks?
- Are workers actively involved in the risk management process?
- Are workers openly raising health and safety concerns and reporting problems promptly?
- Have new work methods or new equipment reduced physical strain or difficulty?
- Has instruction and training on hazardous manual tasks and the implemented control measures been successful?
- Is the frequency and severity of MSD reducing over time?

Attachment 4

- Is an alteration planned to any structure, plant or process that is likely to result in a worker being exposed to a hazardous manual task?
- Has an incident occurred as a result of a worker being exposed to a hazardous manual task?
- If new information becomes available, does it indicate current controls may no longer be the most effective?

If problems are found, go back through the risk management steps, review your information and make further decisions about risk control.

Further Information:

- Training Manual – How to Identify Hazards
- Safety Management System Policy

Relevant Legislation:

- Occupational Safety and Health Act 1984
- Occupational Safety and Health Regulations 1996

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Source of procedure: Michelle Lloyd

Review date: 14/07/2018

Review Responsibility: Michelle Lloyd

Last Reviewed: 14/07/2016

GUIDANCE MATERIAL

1. Actions and postures

This section reviews actions and postures used while performing manual tasks. Awkward postures, sustained postures and repetitive movement are of particular concern.

An awkward posture is one in which any part of the body is in an uncomfortable or bent and twisted position. Awkward postures become particularly hazardous if they are extreme or when they are coupled with forceful exertion, repetitive movement or sustained postures.

Sustained postures are those positions where the whole body or parts of the body are held for prolonged periods of time. Muscular fatigue, strain and discomfort are common problems associated with sustained postures. Prolonged sitting and standing are also associated with blood flow problems. Sustained postures become particularly hazardous if part of the body is in an awkward position.

'Repetitive movement' means using the same parts of the body to repeat similar movements over a period of time. Performing repetitive movement without an adequate number and period of pauses and rest breaks lead to risky conditions. The risk becomes more significant if the repetitive movement also involves awkward postures or forceful exertion.

When assessing the risk of injury from each factor in this section, the overall rating should take into account the effect of how often the task is performed and for how long the task is performed each time.

1.1 Holding loads or arms away from the trunk

Holding or carrying a load away from the body requires more muscular effort and places more stress through the joints than when holding the same load very close to the body.

Picking up a load further away from the body can mean the handling of the object is not controlled.

Accurately placing the load further away from the body will tire the muscles holding the load, due to the need for more careful control over its movement.

1.2 Reaching upwards and handling a load above shoulder height

Reaching above shoulder height usually means the back is arched, neck bent backwards, and arms act as long levers. The load is more difficult to control and greater stress is placed around the shoulder joint, neck and back.

The risk of injury increases the higher the load is above shoulder height.

Lowering from this level to a level below mid-thigh height can require a change of grip.

1.3 Bending back or neck forwards and handling the load below mid-thigh height

Bending forward to pick up loads from a low level creates strain, particularly on the lower back.

1.4 Twisting the back or neck

The back is least able to take the stress caused by excessive twisting in repeated movements or prolonged posture. The combination of twisting and bending forward to handle a load increases the risk further and increases the likelihood of injury or cumulative damage to tissue.

Attachment 4

- 1.5 Sideways bending or load handling on one side
Lifting and carrying loads in one hand places more stress on the side of the body.
- 1.6 Long carrying distances
Carrying a load for an excessive distance, increases muscle fatigue, particularly in the arms. This can affect an individual's ability to carry out other handling activities afterwards.
- 1.7 Sudden jerky, rapid or unexpected movements
Sudden jerky, rapid or unexpected movements can produce strain as the body has not had adequate time to adopt the best position or to allow the muscles to contract to protect the body.
- 1.8 Bending hands or wrists forwards or to the side
Bending the hands or wrists forward or to the side places the body in an awkward posture, increasing the strain on joints and ligaments and reducing the force that can be applied by the arms.
- 1.9 Reaching behind
Reaching behind the back places the back, neck and shoulders in an awkward posture, increasing the risk of injury to these joints and the muscles that control the movement.
- 1.10 Crawling, kneeling, crouching, squatting, lying or semi-lying
These positions place the body in awkward postures, making it more difficult to apply force and placing greater strain on the joints.
- 1.11 Twisting or wringing using fingers or hands
These actions and postures place the hands and wrists in extreme positions and can cause strain to the tendons and ligaments of the upper limb.
- 1.12 Maintaining the same posture for long periods
Maintaining the same posture for prolonged periods can cause muscular fatigue and reduce blood flow to the muscles, increasing the risk of injury and strain.
- 1.13 Repeating similar movements or actions
Repeating similar movements can cause muscular fatigue and tendon strain increasing the risk of injury.

2. Forces and loads

This section looks at factors related to forceful exertion and the characteristics of loads being handled.

Forceful overexertion may occur during activities such as lifting, carrying, lowering, pushing, pulling and restraining. Generation of a high level of force is not always necessary for a strain injury to occur.

Forceful overexertion can also result when a person is exposed to rapid or sudden speed changes such as jerky or unexpected movements while handling an item or load, because the body must suddenly adapt to the changing force.

2.1 Heavy

Evaluating the risks associated with the weight of an object should take into account many factors including:

- The length of time the load is handled
- How often the load is handled
- What position the load is handled in
- How easy it is to grasp the load.

There are no established safe lifting weight limits for a population because the ability to lift loads varies greatly between individuals, and is influenced by many factors including the shape, stability and ease of grasping the load, the environment and how the load is handled.

The risk of injury increases even further when loads are handled in a sitting position, as the forces can only be controlled by the upper body.

A safe load to lift will also vary for individuals depending on how far the load is held away from the trunk and how high or low the load is handled in relation to their waist level.

2.2 Bulky, large or awkward

The shape of the load can affect the way it can be held. For example, the risk of injury will be greater if a load has to be lifted from the ground and is wider than the distance between the knees.

A large load may block the view when carried and increase the chance of a person tripping or walking into obstacles.

2.3 Difficult or uncomfortable to grasp

Loads become more difficult to grasp when they don't have handles, are smooth, slippery, greasy or wet, or handles are uncomfortable to use (e.g. sharp edges). The extra grip and effort required will be tiring for the person and can increase the chance of the load being dropped.

2.4 Unstable, unbalanced or unpredictable

Loads with shifting contents (e.g. drums half full of liquid) make control of the load more difficult, and may lead to sudden additional body stresses for which the person may not be fully prepared.

A load where one side or one part is heavier than others will cause uneven muscular strain. This will be worse if the heavier part cannot be carried close to the body.

2.5 Harmful or fragile

The risk of injury increases when handling loads that are:

- Sharp or rough
- Hot or cold
- Fragile.

These factors may cause injury (e.g. cuts or burns), impair grip or discourage good posture when being handled.

Attachment 4

2.6 Handling a person or animal

Handling people who cannot assist, are unable to bear weight, or are uncooperative, will increase the risk of injury. Live animals being lifted or restrained may suddenly move or pull away, placing extra stress on the back.

2.7 Sudden jerky, rapid or unexpected forces

Sudden jerky, rapid or unexpected forces can increase the risk of injury because muscles are not prepared for work and joints may be strained with the forces involved. For example, using a staple gun that kicks back or lowering a load with a second person when the other person lowers unexpectedly.

Hitting, kicking, throwing, catching or jumping is other examples of such forces.

2.8 Strenuous lifting, lowering or carrying

The risk of injury increases when strain is experienced during a lift, lower or carrying. Strain may be experienced not only when loads are heavy and awkward but also when they are performed repeatedly or for prolonged periods.

2.9 Strenuous pushing and pulling

The risk of injury increases when strain is experienced during pushing and pulling. Initial forces to move an object are greater and may involve higher risk than those required to keep an object moving.

The forces can also be greater when trying to stop a load that is already moving (e.g. stopping a heavy trolley).

Pulling a load whilst moving usually requires an individual to face the opposite direction to which they are moving or requires an individual to reach backwards and twist to pull a load.

Pushing and pulling across the front of the body puts a twisting strain on the body, which can also lead to an increased risk of injury.

2.10 Sustained application of force or grip

Maintaining a forceful grip or sustaining a force increases the risk of muscular fatigue and tendon strain.

3. Vibration

This section reviews exposure to vibration. The risk of injury increases the longer and/or more often a worker is exposed to vibration.

Vibration is considered a risk factor in manual tasks because the vibration can lead to micro-trauma of body tissue, muscular fatigue and a worker may need to exert more force to handle or use items that vibrate.

The risk of injury depends on the characteristics of the vibration, including the magnitude, frequency, duration and direction.

3.1 Whole-body vibration

Whole-body vibration occurs when a worker is in contact with a vibrating surface such as a seat or the floor in heavy vehicles or machinery. Prolonged exposure increases the risk of lower back pain, degeneration of the lumbar vertebrae or disc herniation.

3.2 Hand-arm vibration

Hand-arm vibration occurs when vibrations are transferred to the hands and/or arms either from a tool or from steering wheels or controls in heavy machinery. This can result in disrupted circulation to the hands and damage to nerves, muscles and joints of the hands and arms.

4. The working environment

This section examines the influence of the work environment on the risk of manual task injury.

4.1 Constraints on posture or movement

For space constraint to be a risk, it needs to impose a restriction on a person's ability to perform a manual task. Restricted head room will promote a stooping posture; obstructions may increase the need for twisting or leaning, and narrow gangways will hinder manoeuvring of bulky loads.

Performing manual tasks in confined spaces often requires the worker to adopt sustained awkward postures. Adequate ventilation, comfortable temperatures and adequate lighting may also be compromised in these areas.

4.2 Rough or slippery floors

Uneven or slippery floors increase the likelihood of slips, trips or falls. They may also hinder smooth movement and create additional unpredictability. Uneven floor surfaces can hinder the safe use of trolleys.

4.3 Variations in levels or uneven ground

The presence of steps or steep slopes adds to the difficulty of movement when handling loads, particularly when the load obscures a person's view.

Carrying a load up or down a ladder will be difficult due to the need to have a proper hold on the ladder.

4.4 Adverse climatic conditions

The risk of injury increases with higher and colder temperatures, high humidity, wind, rain or icy conditions.

Working in cool environments has been associated with musculoskeletal disorders. Lower temperatures can not only affect blood flow and nerve function, but can also reduce the flexibility of muscles and soft tissue. Additionally, wearing heavy protective clothing in cold environments may restrict movement, sensation and handling ability when performing a manual task.

Working in high air temperatures can have an effect on sweat production, blood pressure, metabolic rate and core body temperature. Working in a combination of high humidity and heat levels reduces evaporation of sweat and cooling of the body.

Additionally, wearing protective clothing in hot environments may increase the risk of overheating, as the clothing may not allow heat or sweat to dissipate off the body and may restrict movement, sensation and handling ability when performing a manual task.

Wind may increase the force required to handle items and reduce control while handling large objects, especially those that are flexible and with a large surface

area. When working in windy and lower temperatures, the resultant wind chill factor may lower the body temperature further.

Rain, ice and hail may increase the risk of an injury by altering the postures adopted by the worker as floors may become slippery. Visibility may also be affected while the manual task is being performed. The cold temperatures associated with ice may also affect hand dexterity (hand coordination and mobility) and increase the risk of the development of musculoskeletal disorders.

4.5 Poor lighting

Lighting should suit the task being performed in the work environment as well as the person performing the task.

Lighting characteristics that should be considered include:

- Illumination levels
- Direction of lighting relative to manual task
- Reflection
- Glare and
- Colour.

Poor illumination may increase the risk of an injury while performing a manual task due to the worker not being able to see trip hazards. Workers may also be unable to position themselves well relative to the task and to place items safely. Low or high levels of lighting may also lead to awkward or sustained postures, such as leaning forward to either improve viewing or to avoid glare when working on the computer.

4.6 Narrow or obstructed thoroughfares

Narrow or obstructed thoroughfares, such as narrow doorways and walkways with closed doors, can hinder the way in which manual tasks are performed.

Tasks, such as housekeeping and cleaning performed in narrow or obstructed thoroughfares, can involve awkward postures such as reaching or bending over obstacles and increases in forceful exertions.

4.7 Poor ventilation

Inadequate indoor ventilation may increase the risk of several short term and long term health problems, depending on whether dust, fumes, chemical or biological agents are present in the air.

A common short term symptom includes increased risk of fatigue, increasing the risk of injury.

4.8 Distracting or loud noises

Loud noise may interrupt communication between workers performing manual tasks. This may be a source of risk during handling. For example, while transferring a patient in a busy and noisy emergency department, handlers may have difficulty in accurately communicating the direction or type of transfer they are going to use.

Random intermittent noise may also interrupt concentration during a manual task, and this may be an added source of mental demand on the worker, which may subsequently increase muscular tension.

5. Systems of work, work organisation and work practices

This section examines the influence of systems of work, work organisation and work practices on the risk of manual task injury.

5.1 Job demands and control

The risk of injury increases when there is a mismatch between the demands of a task or job and the capability of the worker to meet those demands at that time.

5.2 Task design

The design of tasks will have an impact on the demands of the job. The flow of work and tasks should be designed so that risk factors, such as repetitive activity, forceful exertions, sustained postures and prolonged exposure to vibration, are minimised.

5.3 Work load

Risks may arise when workers find difficulty meeting the demands of the work, either because they have difficulties maintaining current levels of physical work or they are not able to alter the pace of work to suit their abilities.

5.4 Task duration, frequency and variety

Inadequate task variation or inadequate breaks from tasks requiring similar actions contributes to the risk of a musculoskeletal disorder. Where an activity requires long periods of repetitive actions, fixed postures or completing different tasks with similar physical demands, muscular fatigue and the potential to develop an injury is increased.

5.5 Pace of work and time constraints

Pace of work and time constraints, such as high workloads, tight deadlines and lack of rest breaks, may lead to muscular fatigue and increase the risk for the development of musculoskeletal disorders.

5.6 Peak demand

Many activities have predictable peak periods or seasons with associated increases in work load.

Planning ahead for such situations is helpful. Planning and implementing back up resources for unpredictable peak demands can help reduce the strain placed on workers for such periods.

5.7 Working hours

Some types of manual tasks, such as work that is heavy, repetitive or demanding, may not be suitable for extended hours or shifts.

5.8 Support in the workplace

Insufficient levels of support in terms of physical resources (e.g. equipment), staffing levels for assistance, training/supervision, co-worker support and supervision may be risks associated with the development of musculoskeletal disorders.

6. Worker characteristics

This section relates to risk factors related to the person(s) performing the task.

6.1 Young and older persons

Young workers under the age of 18 are at greater risk than adult workers because they are still developing physically and their spine and other joints are more easily damaged.

Older workers may not have the range of movement, fitness level or muscular strength that they may have had in the past. These changes, as part of the process of ageing, may pose as a hazard for some, but not all, older workers.

6.2 Pregnant women or those who have recently given birth

The risk of injury increases as pregnancy progresses, changes can affect ligaments, increasing susceptibility to injury.

Postural problems may increase as the pregnancy progresses. Difficulty in getting a load close to the body can be a particular problem.

Care should also be taken for women who may handle loads following a return to work during the first three months after childbirth.

6.3 Special needs and physical limitations

The risk of injury increases with decreased physical ability.

Workers returning to work after injury may not be able to perform at their normal level of work.

Specific disabilities and illnesses, for example scoliosis and osteoarthritis, may affect a person's ability in manual tasks.

Workers returning from an extended absence may have a reduced level of fitness for physical work.

Occasional heavy manual handling may place extra demands on workers who normally carry out lighter tasks like office work.

6.4 Special skills, capabilities and knowledge

The risk of injury may increase where a greater degree of special skills, capabilities and/or knowledge is required.

Some manual task activities require very specific skills and knowledge to perform.

6.5 Personal protective clothing and equipment (PPE) that hinders movement or posture

The risk of injury may increase from the use of PPE and some types of clothing.

Tight clothing that restricts movement will adversely affect manual task technique.

Where PPE must be worn, its effect on injury risk should be considered. For example, gloves may reduce ability to grip loads firmly. The weight of gas cylinders used with breathing apparatus will increase the stresses on the body.

6.6 Language or cultural barriers

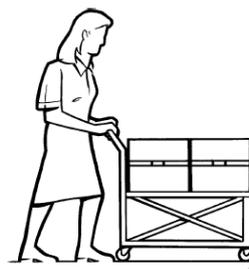
Workers with language barriers may have difficulty understanding information, training and supervision. They may also have difficulties conducting manual tasks within a team without adequate language translation.

Cultural difference may also alter the way in which tasks are conducted and how issues may be raised or communicated.

Examples of manual tasks



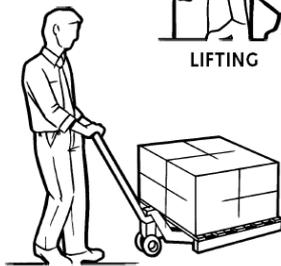
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PUSHING



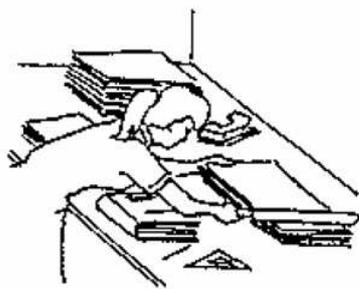
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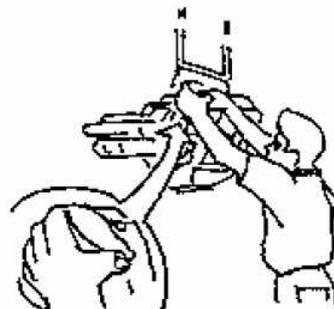
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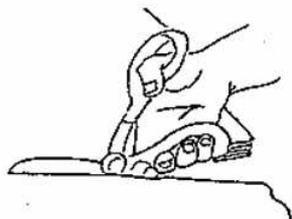
HOLDING



AWKWARD POSTURES



SUSTAINED POSTURES



REPETITIVE MOVEMENT