

Trade of Electrician

Standards Based Apprenticeship

Manual Handling

Phase 2

Module No. 2.1

Unit No. 2.1.3

COURSE NOTES

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WEAR THE RIGHT EQUIPMENT

This may include:

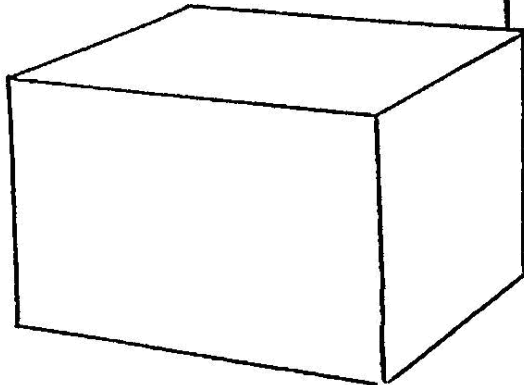
- anti-slip safety shoes
- a hard hat
- safety goggles
- a respirator
- protective gloves
- durable clothing (loose enough for free movement, but tight enough to avoid snags).

REST, OR ROTATE TASKS

Avoid becoming over-tired! Frequent lifting, lowering and moving is demanding work, and can result in cumulative stress.

TALK TO YOUR SUPERVISOR

Do not hesitate to discuss any problems or moves you aren't sure about.



LIFT WITH YOUR LEGS

Assume a comfortable stance. Lift smoothly, keeping the load close to the body. Avoid twisting your body as you lift – move your feet instead. Minimise lifts above your shoulders or below your knees.



KEEP HANDS IN THE "CLEAR"

Be careful not to crush fingers when unloading.

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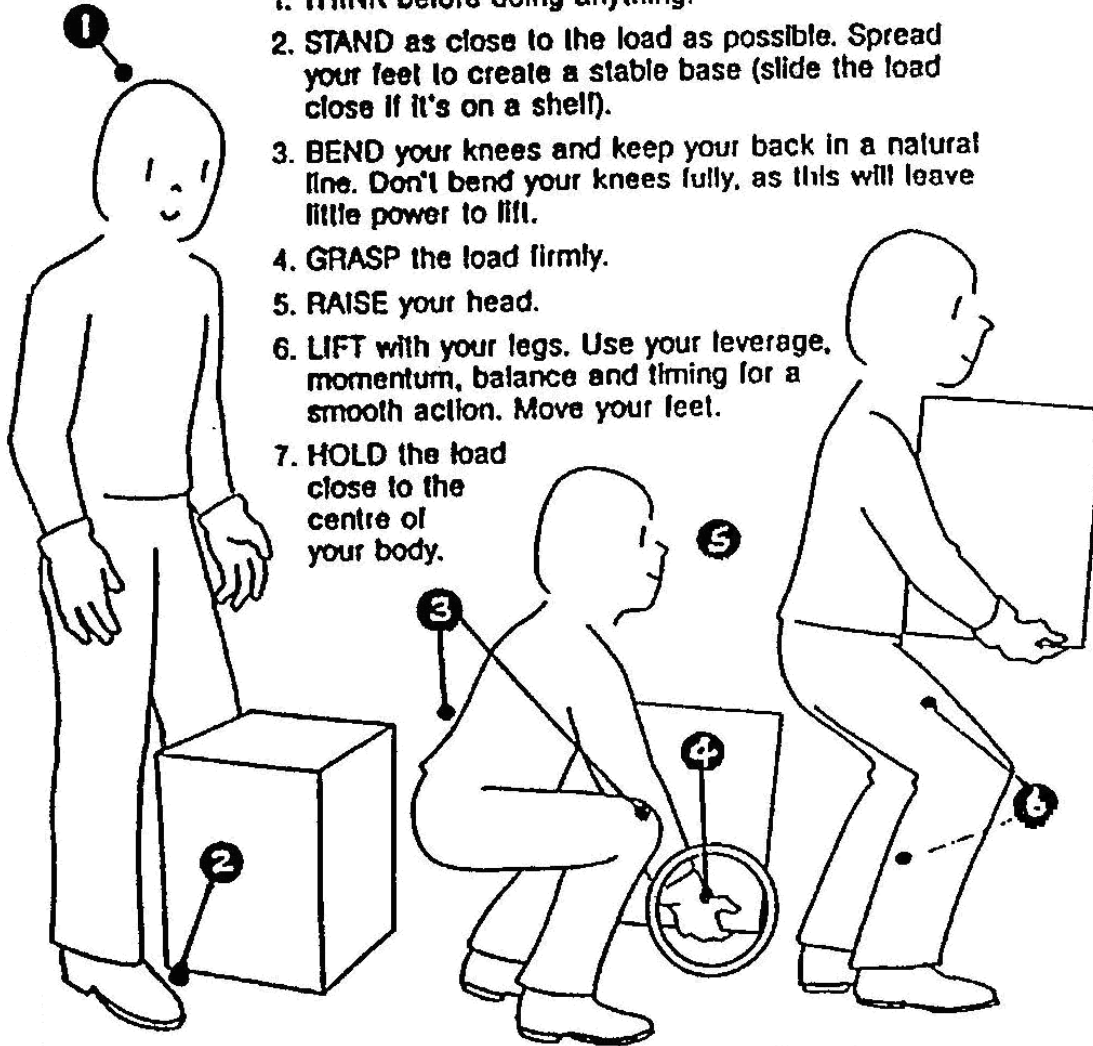
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LIFTING

Practise these methods whether lifting a shopping bag or moving goods:

ONE PERSON LIFT ("squat lift")

1. **THINK** before doing anything.
2. **STAND** as close to the load as possible. Spread your feet to create a stable base (slide the load close if it's on a shelf).
3. **BEND** your knees and keep your back in a natural line. Don't bend your knees fully, as this will leave little power to lift.
4. **GRASP** the load firmly.
5. **RAISE** your head.
6. **LIFT** with your legs. Use your leverage, momentum, balance and timing for a smooth action. Move your feet.
7. **HOLD** the load close to the centre of your body.



CARRYING

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CARRYING

You can help prevent injuries when carrying objects, too! Here's how:

KEEP THE LOAD CLOSE,

to take full advantage of the mechanical leverage of your body.

KEEP YOUR ARMS TUCKED IN

to prevent injury or fatigue to your neck or shoulder muscles.

DON'T CHANGE YOUR GRIP

on the load unless its weight is supported.

AVOID TWISTING YOUR BODY,

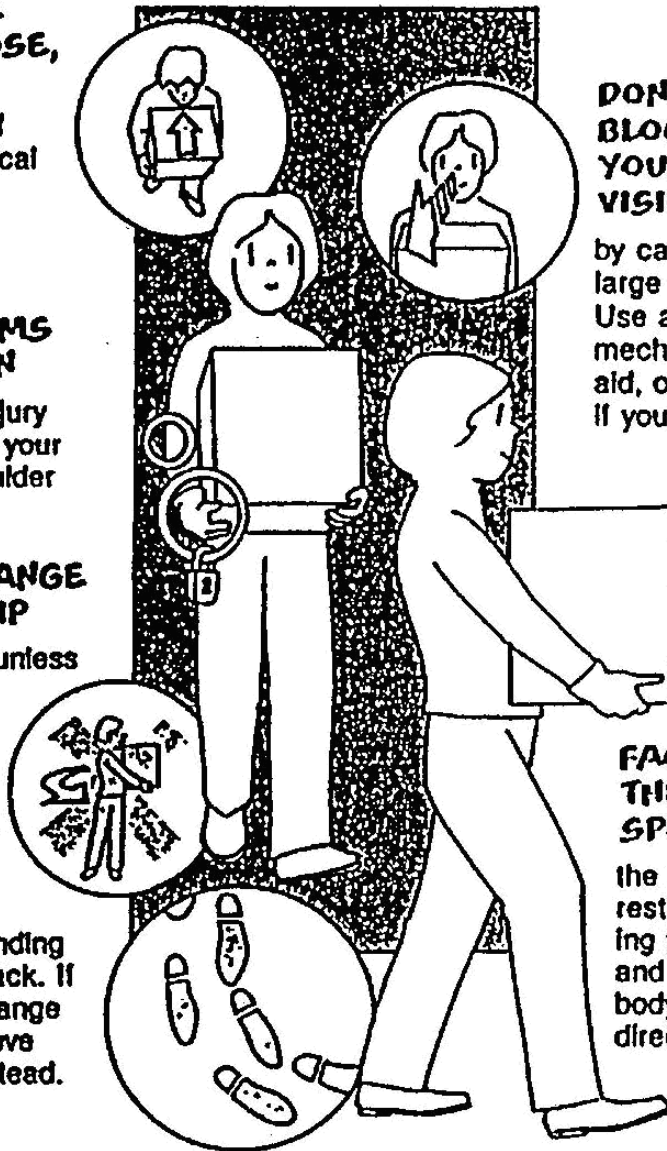
stooping, bending or leaning back. If you must change direction, move your feet instead.

DON'T BLOCK YOUR VISION

by carrying too large a load. Use a mechanical aid, or get help if you need it.

FACE THE SPOT

the load will rest on by turning your feet and whole body in that direction.



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ONE-ARM LOADS

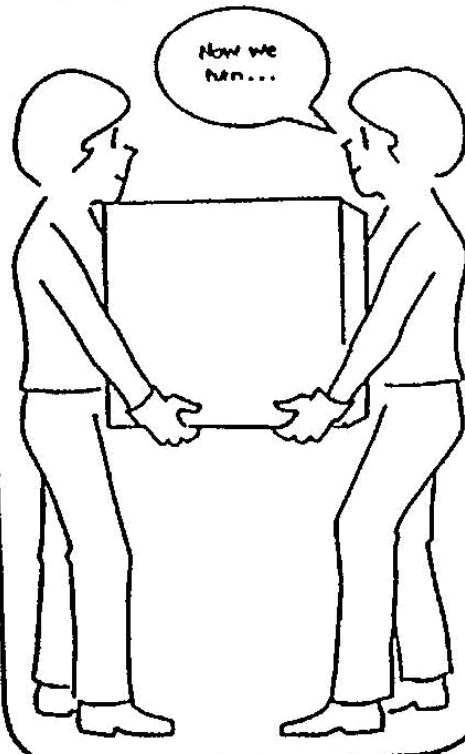
These are not a good idea. But, if they cannot be avoided:

- BRACE your body with the opposite arm, if possible.
- REACH for the load – bend your knees and waist, and keep your back straight.
- GRASP the load firmly (use a handle, if possible).
- LIFT with your legs, using the free arm for balance.
- KEEP your shoulders level – switch hands regularly.
- DIVIDE the load if possible.



TEAM LIFTS

- WORK with someone of similar build and height, if possible.
- CHOOSE one person to call the signals.
- LIFT from the hips at the same time, then raise the load to the desired level.
- MOVE smoothly and in unison.



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Introduction

Welcome to this section of your course, which is designed to educate you, the learner, on the proper procedures for lifting carrying and moving loads in a safe and efficient manner.

Objectives

By the end of this unit you will:

- List the main statutory requirements of both employers and employees in relation to manual handling and general safety in the workplace.
- Explain the structure of the spine.
- Explain the functions of muscles, tendons and ligaments.
- Explain the types of injury that may occur from lifting and handling loads.
- Explain the requirement for a pre-lift analysis of a load.
- Explain how the body should be positioned before attempting a lift.
- Explain and demonstrate good handling techniques for lifting workplace objects.
- Explain and demonstrate good handling techniques for pushing and pulling a workplace object.
- Demonstrate the correct procedures for team lifting a load.
- Describe the various types of handling devices and in what situations they may be used.
- Correctly demonstrate how to handle a typical workplace load using a handling aid.

Reasons

The information in this unit is essential, if you are to avoid back injuries when lifting, carrying or moving loads.

Foreword

Approximately 35% of accidents reported to the HSA in the year 2000 resulted from Manual Handling incidents. Four out of five adults will experience back pain at some stage in their lives. About 50% of people off work with back pain have a recurrence of the problem within one year. Roughly 5% of back pain leads to prolonged disability. The problem is equally common among males and females.

It usually results from:-

- Heavy manual work (forceful exertion, bending, twisting)
- Working in a stooped posture
- Prolonged sitting in a fixed position
- Vibration
- Stress

Employer's Duty

The duty of the employer towards employees is to:

- Assess manual handling risks.
- Take measures where possible to avoid manual handling.
- Provide manual handling training.
- Carry out risk assessment where manual handling is unavoidable.
- Provide employee with precise information about the load.
- Provide a reasonably safe place of work.
- Provide reasonably safe plant and equipment
- Provide reasonably safe systems of work.

Employee's Duty

The duty of the employee is to:

- Take reasonable care for his safety and welfare and that of others in the workplace.
- Use any equipment, protective clothing or other means provided by the employer for securing his safety and welfare in the workplace.
- Report to his employer any problems or defects which might endanger health and safety.
- Not intentional or reckless interference with or misuse any equipment.

Structure of the Spine

It is well known that the vertebral column, or spine, has the shape of an elongated S. At chest level it has a slight backward curve, and in the lumbar region it has a slight forward curve. This construction gives the spine elasticity, to absorb the shocks of running and jumping.

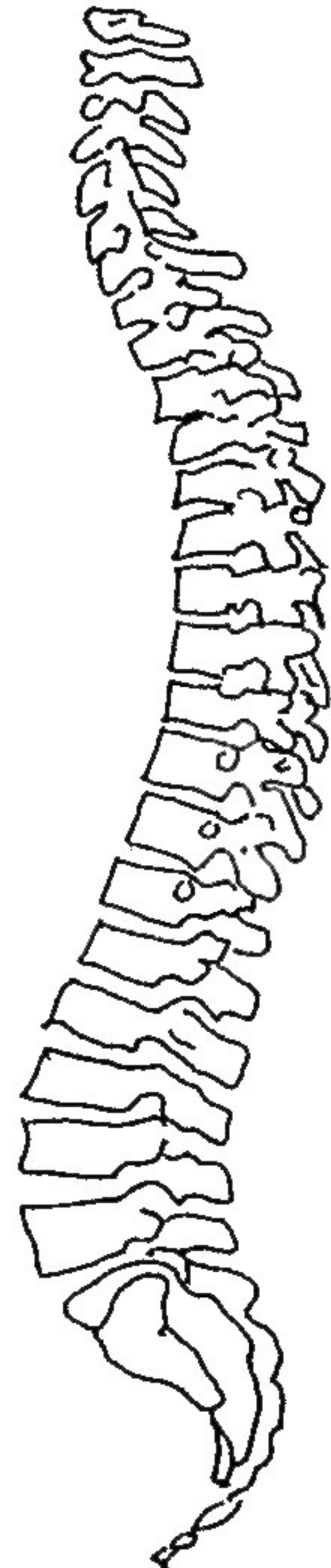
The loading on the vertebral column increases from above downwards, and is at its greatest in the lower five lumbar vertebrae. An intervertebral disc separates each pair of vertebrae. Degeneration of a disc first affects the margin of the disc, which is normally tough and fibrous.

A tissue change is brought about by loss of water, with the result that the fibrous ring becomes brittle and fragile and loses its strength. At first the degenerative change merely makes the disc flatter, with the risk of damage to the mechanics of the spine, or even of displacement of the vertebrae. Under these conditions quite small actions such as lifting a weight, a slight stumble or similar incidents may precipitate severe backache and lumbago.

When degeneration of the disc has progressed further, any sudden force upon it may squeeze the viscous internal fluid out through the ruptured outer ring and so exert pressure either on the spinal cord itself or on the nerves running out from it. This is what happens in the case of a “Slipped Disc” or disc herniation.

Pressure on nerves, narrowing of the spaces between vertebrae, pulling and squeezing at adjoining tissues and ligaments of the joints are the causes of the variety of aches, muscular cramps and paralyses including lumbago and sciatica which commonly accompany disc degeneration.

Back troubles are painful and reduce one’s mobility and vitality. They lead to long absences from work, and in modern times are among the main causes of early disability. They are comparatively common in the age group 20 – 40 with certain occupations (labourer, farmer, porter, nursing staff, etc.) being particularly vulnerable to disc troubles. Moreover, workers with physically active jobs suffer more from ailments of this nature, and their work is more affected as a result.



Pregnant Employee

- Risks due to manual work must be assessed for pregnant employees and employees who have recently given birth.
- Health and safety leave must be given if the maternity employee cannot be protected from the risks identified.
- Certification of risk by employer for social welfare purposes.

Handling Loads

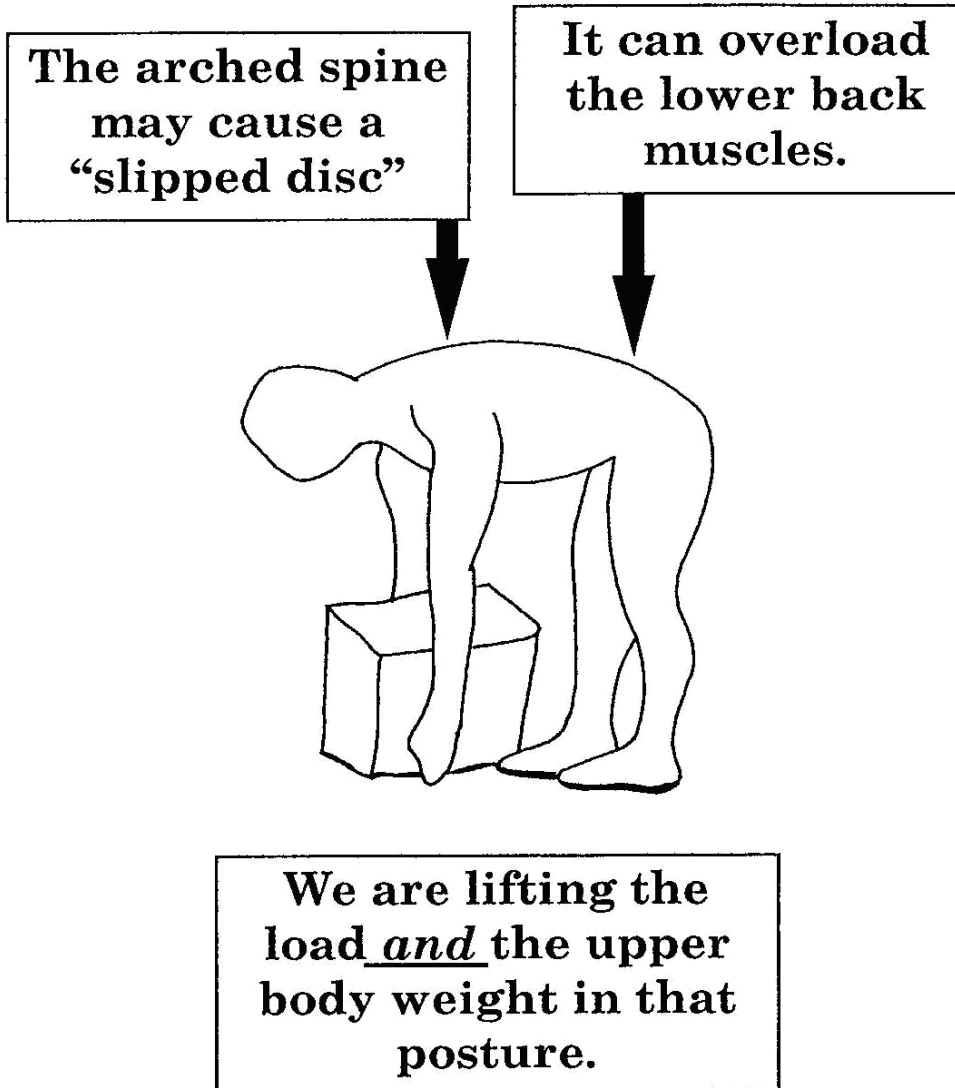
Avoid

- Very heavy loads.
- Arching of the spine.
- Excessive or repeated twisting.
- Over-stretching or over-reaching.

Ensure

- A good secure grip
- Awareness of the weight and stability of the load.
- Correct stance and lift posture.
- Smooth quick lift.
- Correct protective clothing and equipment.
- Proper co-ordination of team lifts.

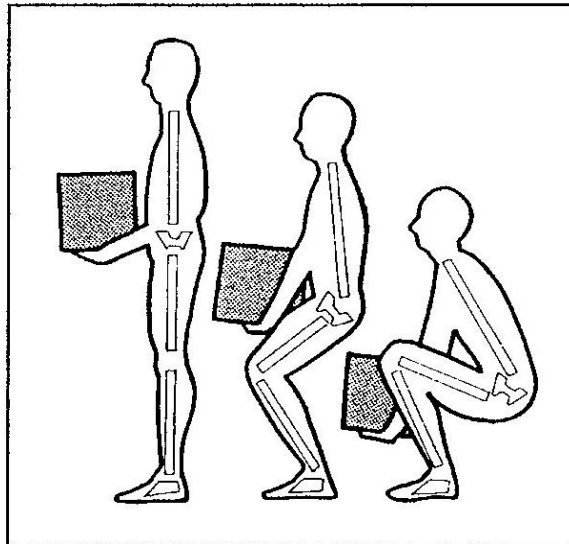
Stooping to Lift



Bending the Knees

BENDING THE KNEES TO LIFT ENSURES :

- **That the leg muscles do the lifting (not the smaller back muscles)**
- **That a good lifting posture can be adopted.**



- **That the load can be reached without arching the spine**

Moving Things the Right Way

WHY
 should I learn the
RIGHT WAY
 to move and
 lift things
 ?

Because you'll
 help reduce the
 risk of accidents
 and injury.

Don't take chances with:

**STRAINS
 AND
 SPRAINS**

Muscles and
 joints can be
 injured by
 over-exertion.



WOUNDS

Handling sharp,
 rough surfaces
 can cut and
 bruise skin.

FRACTURES

Dropping a heavy
 load can break
 bones.



HERNIAS

The strain
 of lifting can
 cause painful
 ruptures
 in the
 abdominal
 wall.

Make your move
 to safety --

not
 injury!

Moving Things the Wrong Way

MOVING THINGS THE WRONG WAY

may injure your back!
People may also be at risk
if they are not:

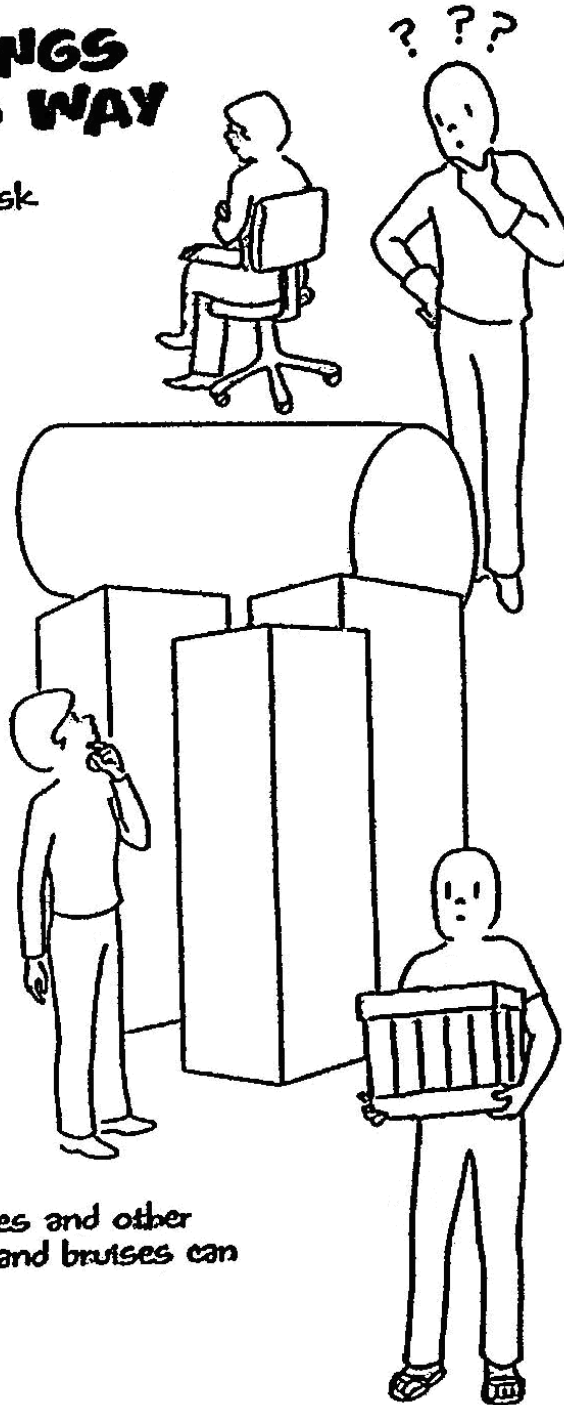
PROPERLY TRAINED
to work safely!

PROVIDED WITH SAFE SYSTEMS
of work and adequate supervision

PHYSICALLY SUITED
or in proper shape to carry out a given task

WEARING THE PROPER CLOTHING,
footwear and other protective equipment for the type of work they do

Fortunately, back injuries and other sprains, strains, cuts and bruises can usually be prevented!



Prevent Pain, Injuries and Damage

PREVENT PAIN, INJURIES AND DAMAGE

Follow these basic tips to prevent accidents:

EXAMINE THE OBJECT

Determine its weight and look for sharp edges. All loads which are heavy or awkward should be marked. Check to see if the load is stable and equally distributed. This is a responsibility that your supervisor shares with you.

PLAN THE JOB

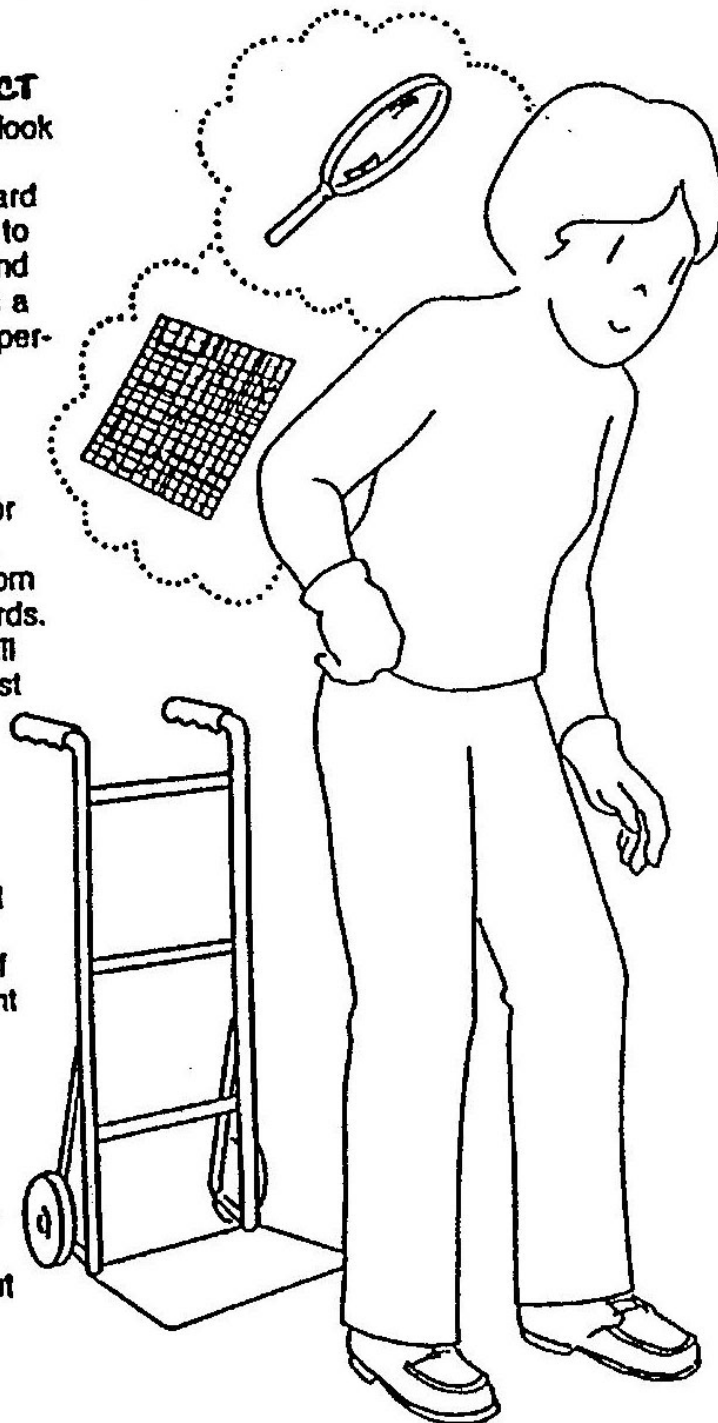
Check with your supervisor on a safe system of work. Plan a route that's free from tripping and slipping hazards. Know where the object will be unloaded and plan "rest stops" along the way.

GET A GOOD GRIP

Decide in advance how to hold the object. Protect your hands and feet by grasping the load firmly. If you wear gloves to prevent cuts or burns, make sure they fit properly.

GET HELP

Use the mechanical aids provided, and get help if you have any doubt about moving an object by yourself.



WEAR THE RIGHT EQUIPMENT

This may include:

- anti-slip safety shoes
- a hard hat
- safety goggles
- a respirator
- protective gloves
- durable clothing (loose enough for free movement, but tight enough to avoid snags).

REST, OR ROTATE TASKS

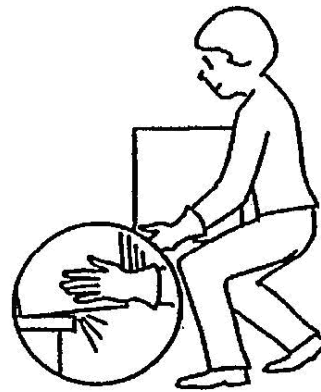
Avoid becoming over-tired! Frequent lifting, lowering and moving is demanding work, and can result in cumulative stress.

TALK TO YOUR SUPERVISOR

Do not hesitate to discuss any problems or moves you aren't sure about.

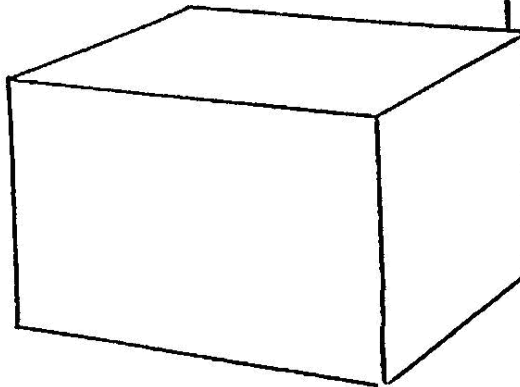
LIFT WITH YOUR LEGS

Assume a comfortable stance. Lift smoothly, keeping the load close to the body. Avoid twisting your body as you lift – move your feet instead. Minimise lifts above your shoulders or below your knees.



KEEP HANDS IN THE "CLEAR"

Be careful not to crush fingers when unloading.



Lifting

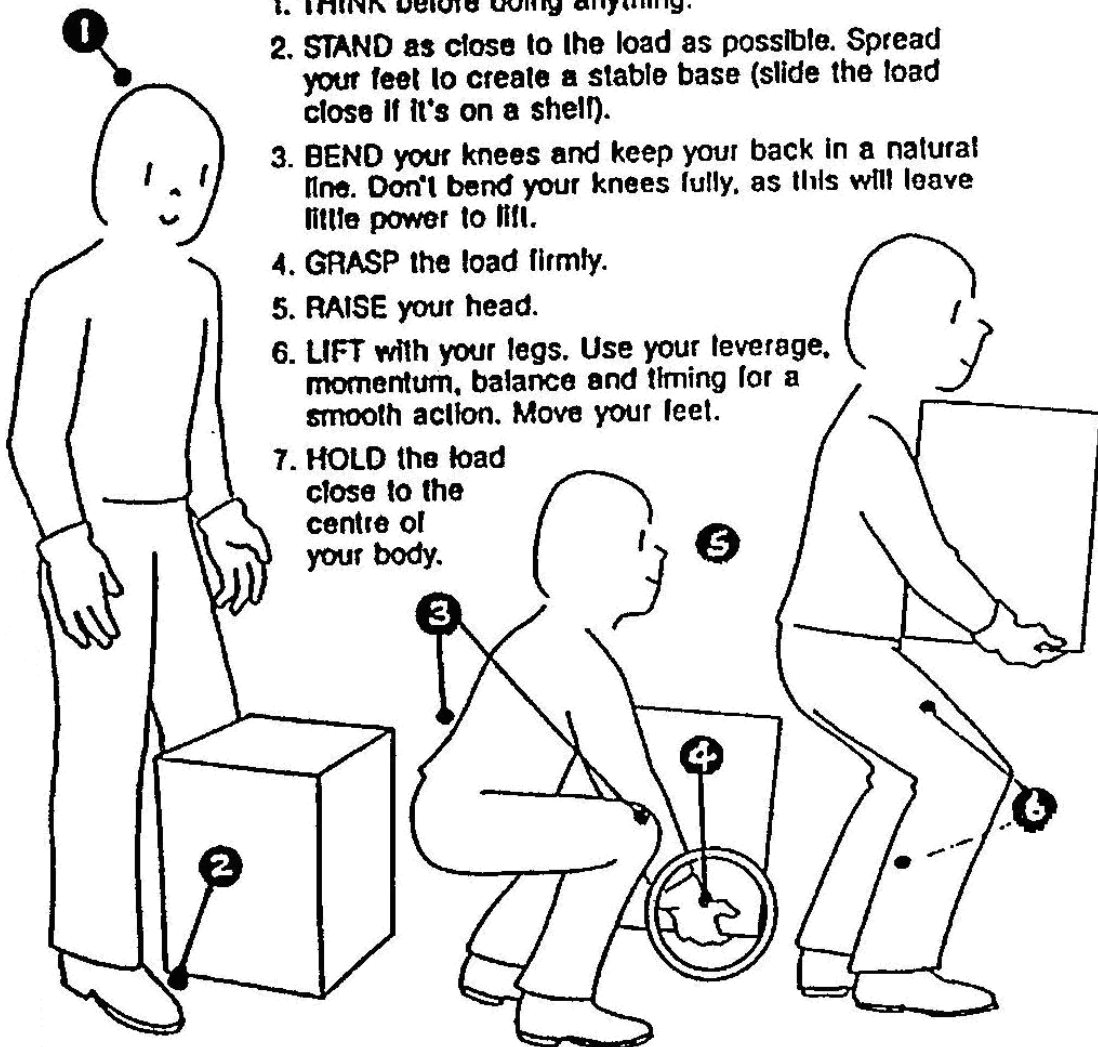
To avoid injury do warm-up exercises before lifting.

LIFTING

Practise these methods whether lifting a shopping bag or moving goods:

ONE PERSON LIFT (“squat lift”)

1. **THINK** before doing anything.
2. **STAND** as close to the load as possible. Spread your feet to create a stable base (slide the load close if it's on a shelf).
3. **BEND** your knees and keep your back in a natural line. Don't bend your knees fully, as this will leave little power to lift.
4. **GRASP** the load firmly.
5. **RAISE** your head.
6. **LIFT** with your legs. Use your leverage, momentum, balance and timing for a smooth action. Move your feet.
7. **HOLD** the load close to the centre of your body.



Carrying

CARRYING

You can help prevent injuries when carrying objects, too! Here's how:

KEEP THE LOAD CLOSE,

to take full advantage of the mechanical leverage of your body.

KEEP YOUR ARMS TUCKED IN

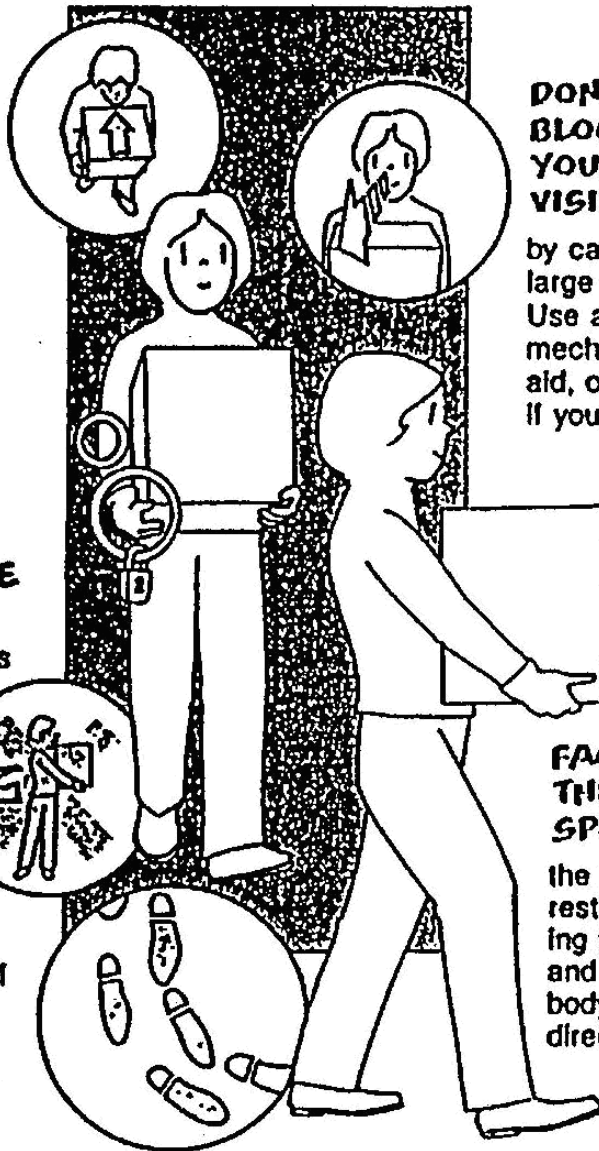
to prevent injury or fatigue to your neck or shoulder muscles.

DON'T CHANGE YOUR GRIP

on the load unless its weight is supported.

AVOID TWISTING YOUR BODY,

stooping, bending or leaning back. If you must change direction, move your feet instead.



DON'T BLOCK YOUR VISION

by carrying too large a load. Use a mechanical aid, or get help if you need it.

FACE THE SPOT

the load will rest on by turning your feet and whole body in that direction.

Unloading

UNLOADING

Be as careful setting down the load as you are when lifting. Repeat the same procedure in reverse:

<p>① BEND YOUR KNEES</p> <p>to lower the load. Keep your back straight and the weight close to your body.</p>	<p>② BE CAREFUL WITH FINGERS</p> <p>and toes. Allow enough room for them when the load is set down.</p>
<p>③ SLIDE THE LOAD</p> <p>into tight spaces – it's much easier and safer than trying to lift it.</p>	<p>④ PLACE THE LOAD</p> <p>on a bench or table by resting it on the edge and pushing it forward with your arms and body.</p>

BE SURE THE LOAD IS SECURE
 wherever you place it. Make certain it won't fall, tip over, roll, or block someone's way.

Special Lifts

ONE-ARM LOADS

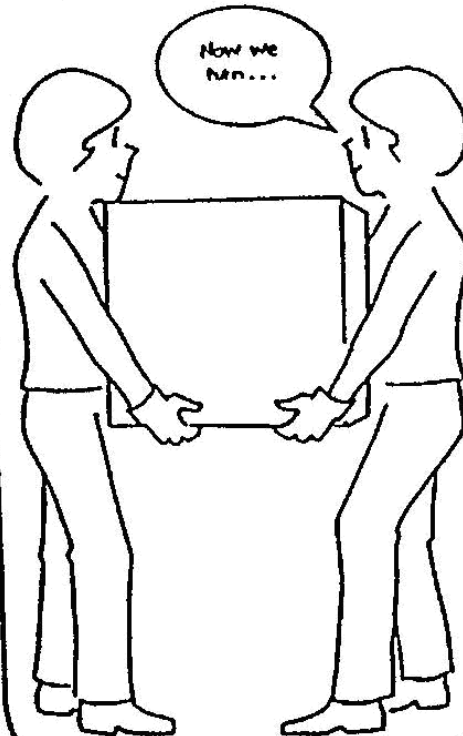
These are not a good idea. But, if they cannot be avoided:

- BRACE your body with the opposite arm, if possible.
- REACH for the load – bend your knees and waist, and keep your back straight.
- GRASP the load firmly (use a handle, if possible).
- LIFT with your legs, using the free arm for balance.
- KEEP your shoulders level – switch hands regularly.
- DIVIDE the load if possible.



TEAM LIFTS

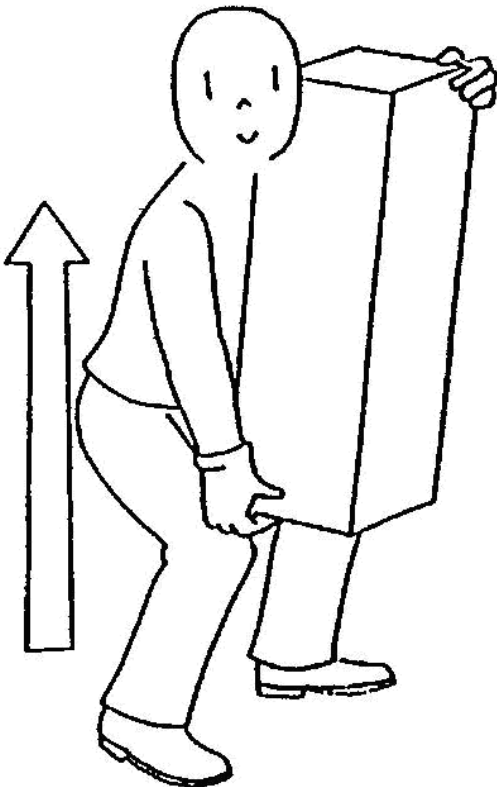
- WORK with someone of similar build and height, if possible.
- CHOOSE one person to call the signals.
- LIFT from the hips at the same time, then raise the load to the desired level.
- MOVE smoothly and in unison.



Awkward Objects and Overhead Lifts

AWKWARD OBJECTS

- **STAND** over one corner of the load, with your feet comfortably apart.
- **GRASP** the bottom inside and top outside corners.
- **BEND** your knees and lift, keeping the same grip.
- **SEEK** advice if you have any doubts.



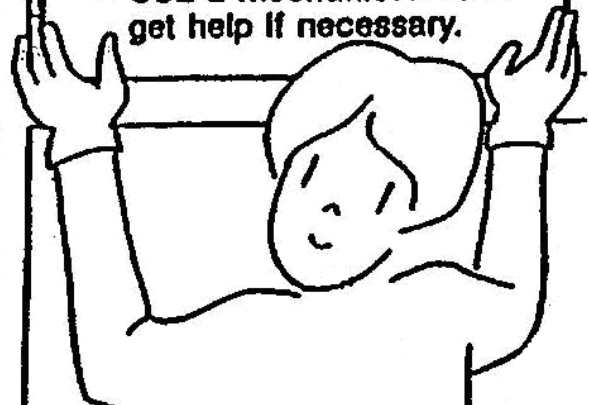
OVERHEAD LIFTS

LIFTING TO A HIGH PLACE:

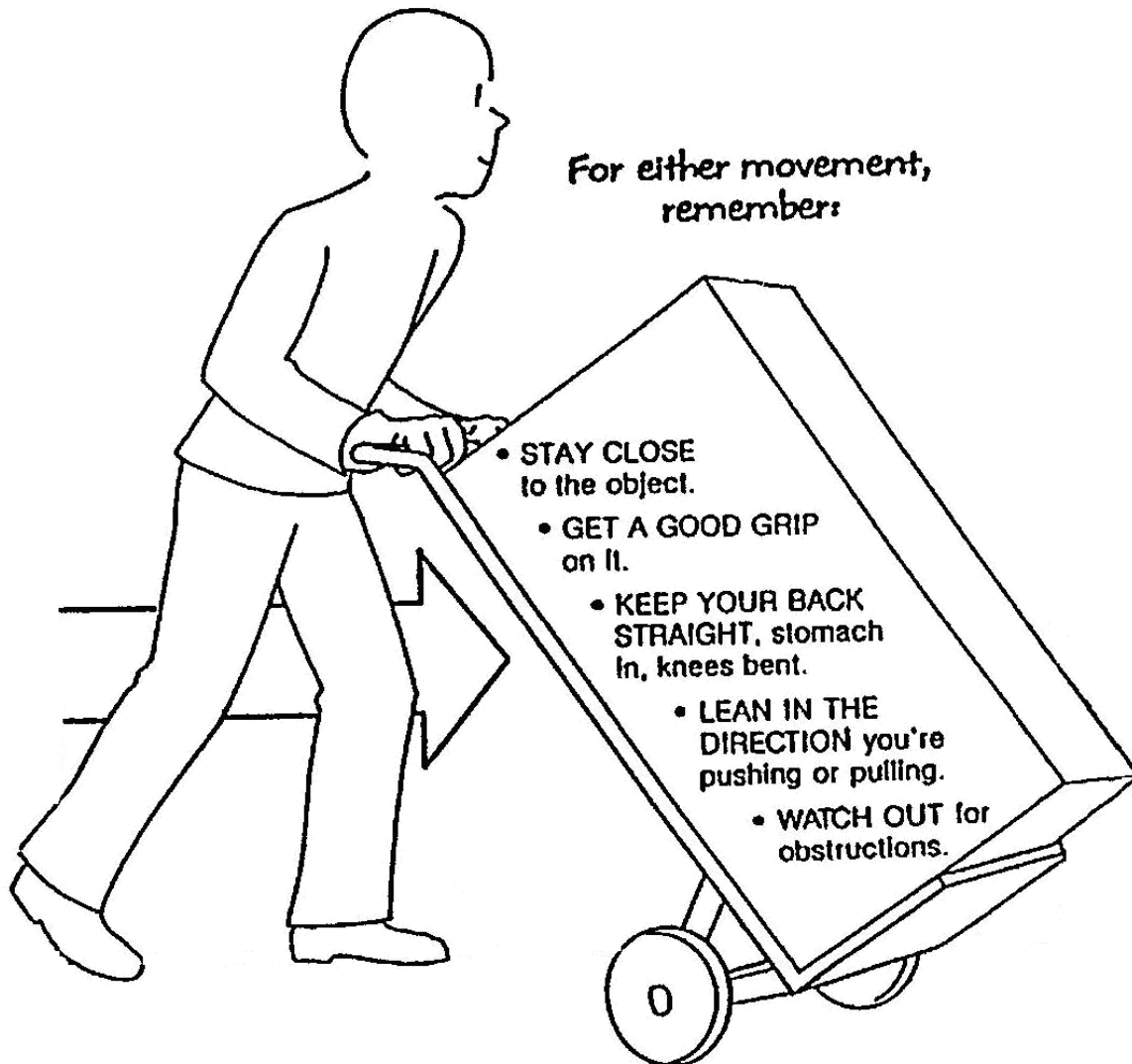
- **LIGHTEN** the load, if possible.
- **STAND** on something sturdy, with one foot in front of the other, unless using a stepladder.
- **USE** a mechanical aid or get help if the load is awkward or heavy.

LOWERING FROM A HIGH PLACE:

- **TEST** the load's weight by pushing up on it. Check to see if the load will shift when you lift it.
- **STAND** as close to the load as possible.
- **GRASP** the object firmly, sliding it down your body.
- **USE** a mechanical aid or get help if necessary.



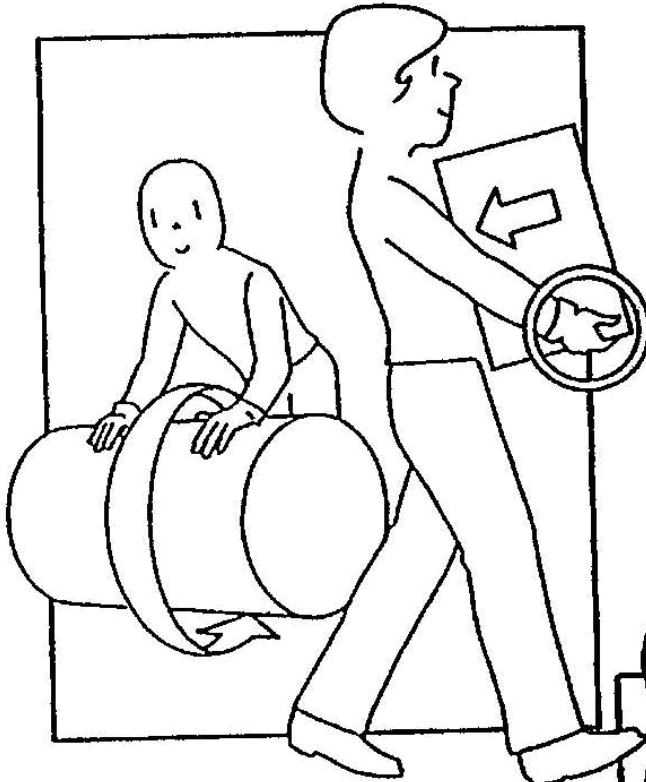
Pushing and Pulling Safety



KEEP THE STRAIN OFF YOUR BACK.
Let your body's weight and leg muscles do the work for you.

Special Objects Require Special Handling

SPECIAL OBJECTS REQUIRE SPECIAL HANDLING



BARRELS, DRUMS AND KEGS

Roll a heavy barrel if you move it by yourself - rocking will help get it started. If you must move it on end, use a mechanical aid or get help.

BOXES AND CARTONS

Grasp opposite bottom corners, and keep the object close to the middle of your body.

SACKS

Carry the sack on your shoulder, braced by your hand on your hip. Or, hold it at opposite ends, resting the load against your hip and stomach. Use extra care with slippery plastic sacks.



Team Effort

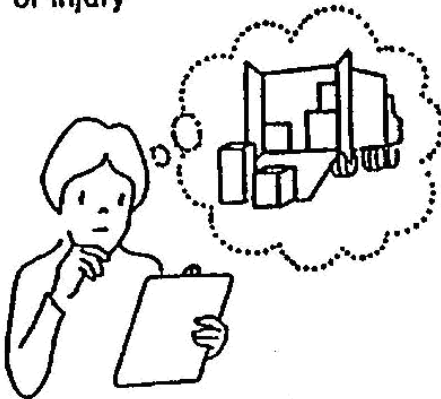
IT TAKES A TEAM EFFORT

to organise safe systems for handling loads.

Your employer is working hard to:

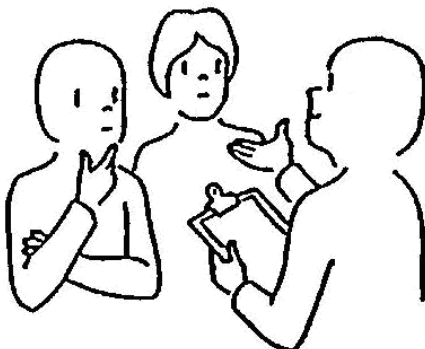
ASSESS LOADS

and determine whether mechanical or other aids will be required to minimise risk of injury



PROVIDE INFORMATION AND TRAINING

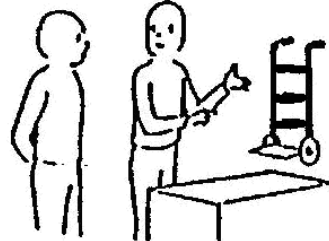
regarding safe work systems along with details (weight, centre of gravity, etc.) on various loads.



To do your part, you should:

TAKE ALL TRAINING SERIOUSLY

and make use of what you know at all times



NOTIFY YOUR EMPLOYER

of any medical conditions that could affect your ability to handle loads – for example pregnancy, illness or injury.

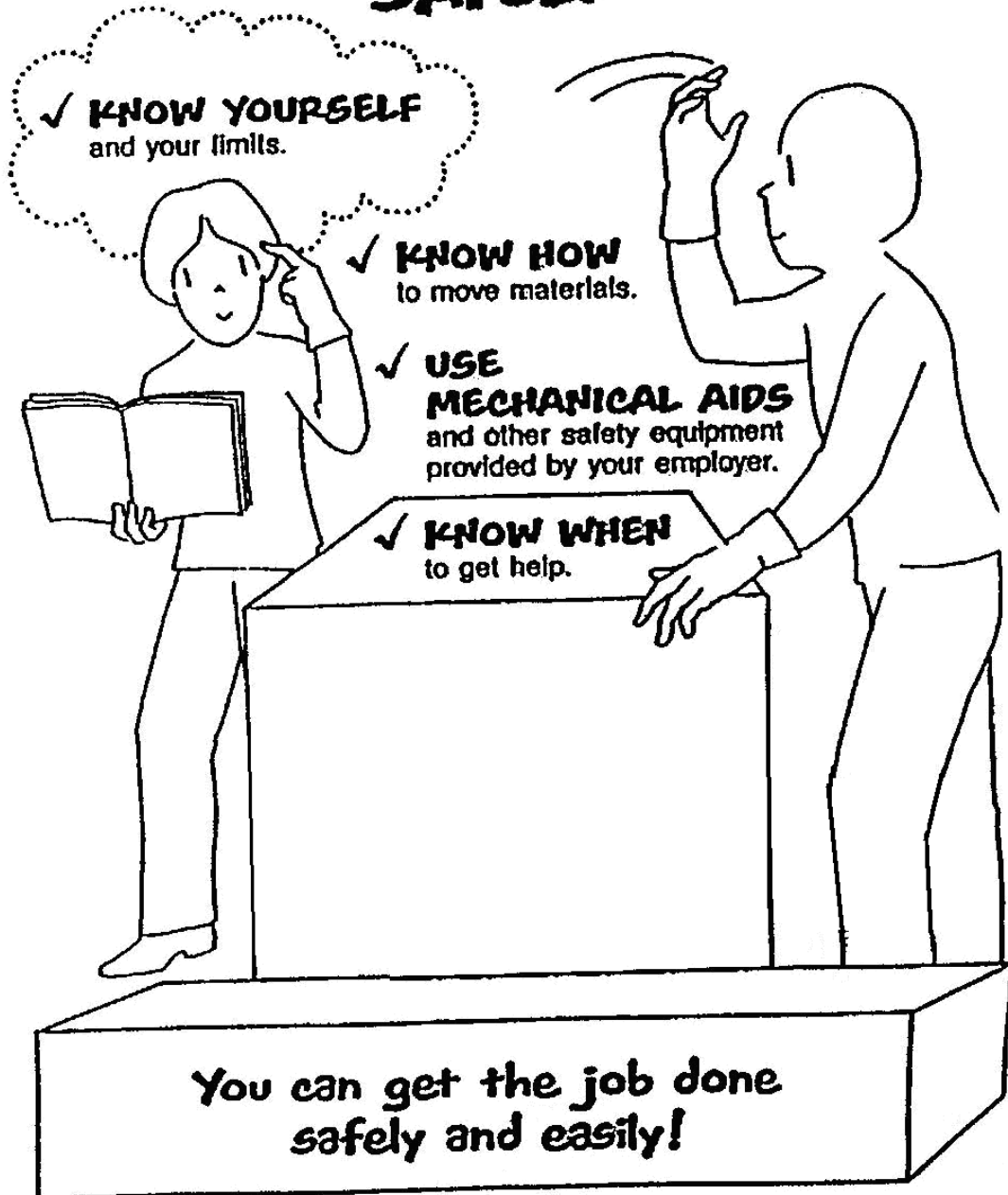


REPORT ANY HAZARDS

or potential hazards to your supervisor at once. Make your safety and the safety of others a top priority!



So -- BE SURE TO HANDLE OBJECTS SAFELY

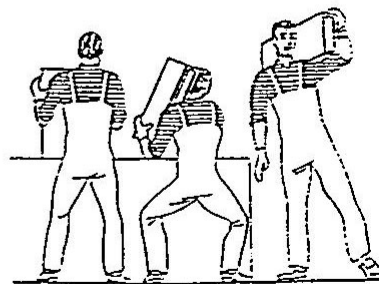
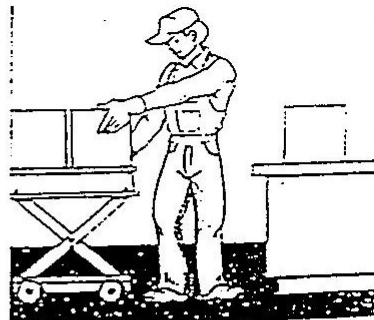
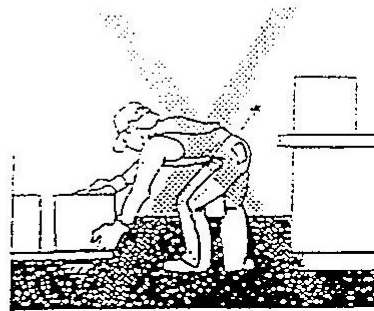


Legal Obligations

MANUAL HANDLING - LEGAL OBLIGATIONS

If a manual handling task involves a risk of back injury the **EMPLOYER** must:

- Eliminate it or
- Mechanise it or
- Assess it and
- Train employees and
- Ensure they can cope



Eight Principles of Lifting

1. Assess the task, the area and the load
2. Broad stable base - feet flat on floor
3. Bend the knees
4. Back straight
5. Firm grip
6. Arms in line with trunk
7. Weight close to centre of gravity
8. Turn feet in direction of movement