

Moving and Handling Techniques



Introduction

Manual handling involves any activity that requires the use of force exerted by a person to lift, lower, push, pull, carry or otherwise move or hold an object. Every department in the College has tasks that involve manual handling, whether it's carrying boxes of printing paper in an office or moving large pieces of equipment in a workshop or laboratory.

The Regulations specify that all manual handling activities should be avoided when practical to do so and implement controls/measures such as the use of mechanical aids when it is impossible to avoid such activities.

This guide has been developed to provide practical guidance on lifting and manual handling for College staff working in laboratories, workshops, stores and offices. It offers illustrations and details of how to lift an array of objects ranging from small light loads to moving very large items and gas cylinders.

The first section provides information on numerical guidelines for lifting/lowering loads, reaching and principles of safe manual handling (planning the lift, lifting technique/manoeuvre and moving the load).

The following diagrams are intended to offer some guidance regarding individual capability. Figure 1 assumes that a simple straight lift of a load of 25 kg, for a short duration, from the floor to waist height and in normal environmental conditions, is within the capability of an 'average' person.

Lifting and Lowering

The regulations do not specify safe weights because capability is so variable. Figure 1 provides a guide to the reduction in capability when lifting loads to different heights and distances from the body. It assumes a 25 kg load to be within your capability when a simple straight lift to waist height is involved. No single person should be required to lift, lower or carry loads over 25kg. This limit would only apply when the load is within the individuals capabilities and when no other risk factors are present e.g. bending

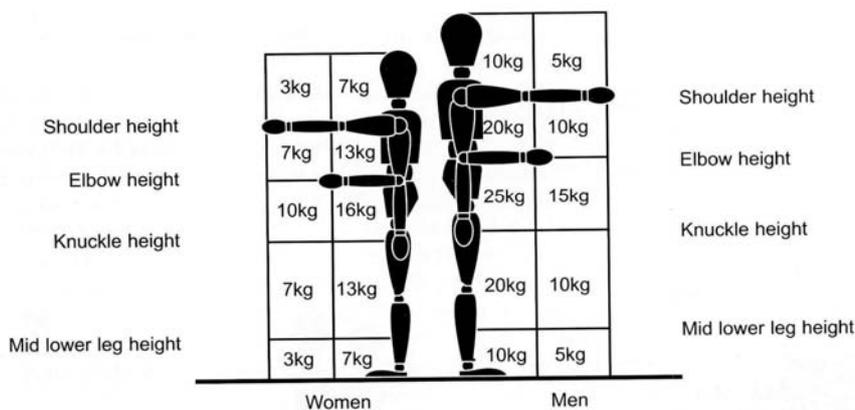


Figure 1: Numerical guidelines for lifting and lowering loads

Remember that your ability to lift may be increased if you have been appropriately trained in lifting techniques, or, it may be considerably reduced in ill health or if the working environment conditions are in any way adverse e.g. too hot/cold, slippery/uneven floors, difficult to grab the load.

The risk of injury increases as the weight of the load increases. However, the risk comes not just from the weight of the object being handled but also the way it is handled e.g. twisting, reaching, repeating task frequently.

Reaching

When a load is held away from the body, the stress on the lower back increases substantially. The maximum weight you can lift safely is reduced dramatically the further away from the body that the load is handled (Figure 2). Long reaches increase the risk of a lower back injury.

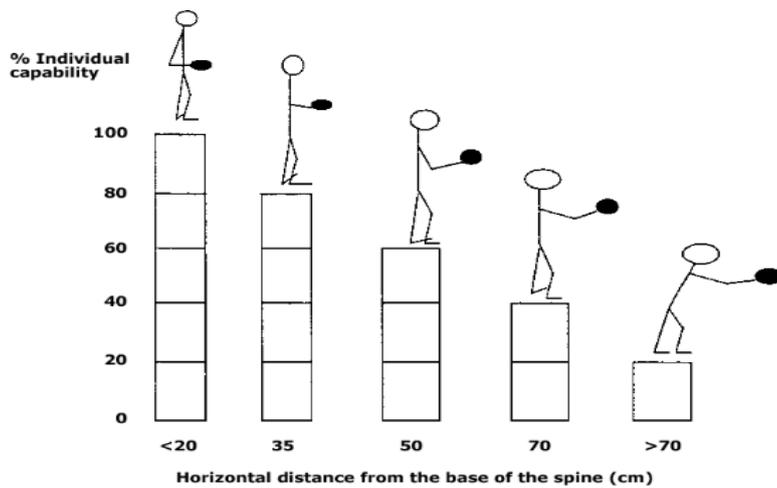


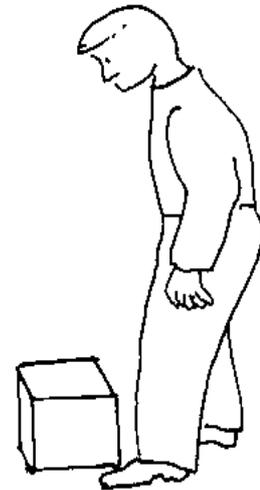
Figure 2: Effects of reaching on individual capability

Principles of safe lifting practices

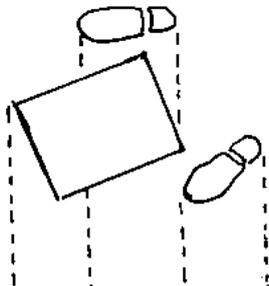
In order to lift a load safely, you should take the following guidelines into consideration.

Plan the lift

- Unfamiliar loads must be treated with caution. Gently rock the load to test the weight and its distribution
- Consider the following points
 - Where is the load going?
 - Can handling aids be used?
 - Is a team lift required?
 - Is there adequate space for the lifting manoeuvre?
 - Can the lift be completed without awkward stooping or twisting movements?
- Remove any obstructions or tripping hazards from the route
- Plan resting places if the load is to be moved a long distance
- Consider the use of protective equipment e.g. gloves, boots



Lifting technique



Place the feet apart, giving a stable base for lifting

- Avoid tight clothing or unsuitable footwear e.g. high heels
- Placing one leg forward of the other will help improve balance and control
- If a close approach to the load is not possible, try sliding it towards you before attempting to lift it



Bend your knees (not your back)

- Keep your back straight
- Keep your shoulders level and facing the same direction as your hips

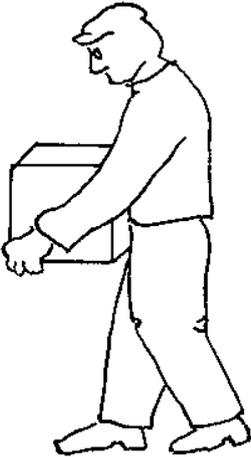
Grip the load with your palms, rather than just your fingers. Keep your arms close to your body to help support the load

Lifting manoeuvre

In order to avoid risking a manual handling injury, you should:

- Lift smoothly avoiding jerking movements
- Bend your knees
- Lift your head first – the back then straightens automatically
- Use your leg muscles to lift the load – not your back
- If you feel excessive strain, slowly lower the load and seek help

Moving the load



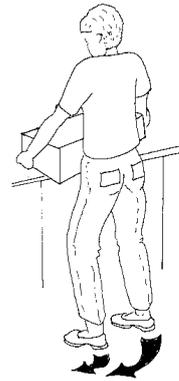
- When carrying, keep the load as close to your body as possible
- Keep the heaviest side of the load closest to your body
- When pushing or pulling, use your body weight to move the load – if possible, let the momentum of the load do some of the work for you e.g. when pushing trolleys
- When pulling, keep your back straight and your arms as close to your body centre line as possible
- Avoid twisting your body when turning

Examples of lifting techniques

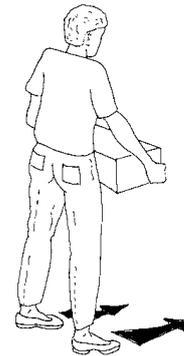
Small light loads (one person lift)

For example: boxes of paper, supplies for stores, small tools

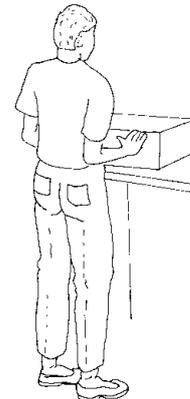
- Stand facing towards the bench with one foot slightly in front of the other
- Test the weight by lifting slightly at one edge
- Grasp load at opposite diagonals
- Move the load towards the body



- Turn the body by moving the back foot and then the front foot until pointing in direction of travel – do not twist your body
- Move off



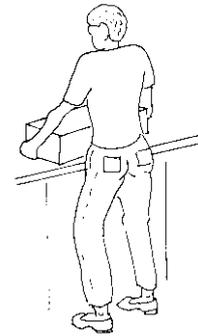
- Transfer the load to another bench or trolley if over a long distance
- Remember to flex the knees not the back when lifting and lowering
- Do not lift and twist as this could result in a back injury



Small, moderately heavy loads (one person lift)

For example: tool boxes, laboratory equipment, materials

- Disconnect any leads or pipes
- Stand face to the bench with feet astride and one foot slightly in front of the other and the knees slightly flexed
- Test the weight by lifting slightly at one edge
- Grasp the underside edges at opposite diagonals and move load towards edge of bench
- Move the legs back slightly with the feet still astride
- Turn one edge of the load so that it protrudes slightly from the bench



- Pull the load towards the body grasping the load on opposite diagonals
- Readjust the feet position so still astride but at an angle to the bench
- With your body facing the bench, lift or slide the load along the bench
- Take step back and move body into direction of travel – do not twist your body, use your feet to turn

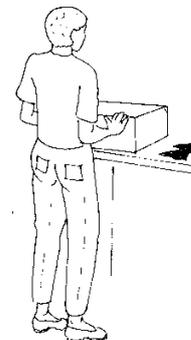


When putting back on to a bench or trolley

- Don't push straight on – put on at an angle
- Keeping close to the body, push the load around into position
- The body position should be at an angle to the bench with the inside foot leading as you lower the load



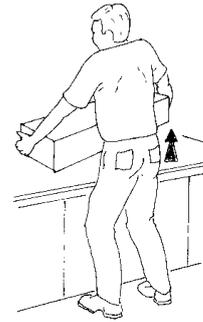
- When the load is lowered, readjust your body position so that both feet are facing the bench before pushing



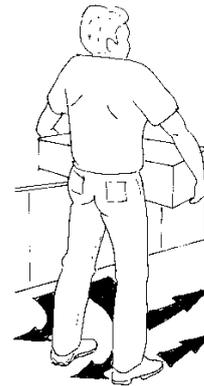
Bulky light loads (one person lift)

For example: large boxes/plastic containers

- Stand on to the load with knees slightly bent and one foot slightly in front of the other
- Test the weight by lifting slightly at one edge
- Grasp either end for a wide load or opposite diagonals for a thin load
- Lift to a comfortable height

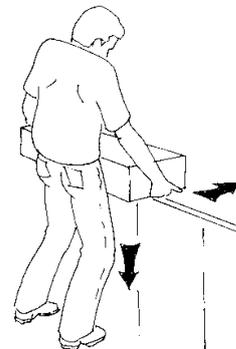


- Step back so that the feet are astride with one foot slightly in front of the other
- Turn the body by moving the back foot and then the front foot until pointing in the direction of travel
- Move off



When putting back on to a bench or trolley

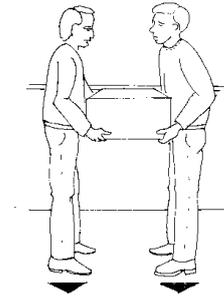
- Position the load where required
- Remember to flex the knees, not the back, whilst lowering the load
- Adopt the same procedure if placing the load on a trolley: where fitted, ensure wheel brakes are locked on the trolley
- Avoid twisting and turning



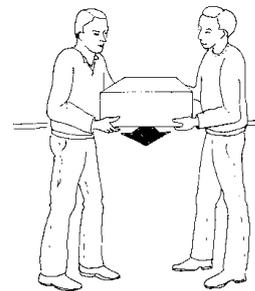
Heavy/moderately heavy loads (two person lift)

For example: large pieces of equipment, sheets of metal/wood, heavy tools

- Slide the load to the centre of the bench
- Stand side on the bench with the inside foot slightly forward
- Reach over and slide the load, from one edge, then the other, until it is at the edge of the bench
- Slide the load forward until the front edge of the load slightly overhangs the bench
- Grip the load at each corner

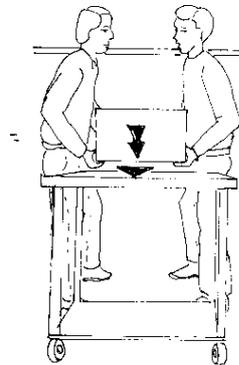


- Pull towards the body grasping the load on opposite diagonals
- Readjust the feet position so still astride but at an angle to the bench
- One person to synchronise the lift by counting 1, 2, 3, Lift
- Lift the load and transfer it to the centre of the body allowing the weight to be transferred from the inside leg
- Readjust feet position so pointing in the direction of travel and move off



When putting back on to a bench or trolley

- If placing the load on a trolley, ensure the trolley wheels are locked
- Move the weight sideways and shift to the outside leg
- Transfer to the bench or trolley directly or by putting the front edge down first and pushing the load onto the surface



Do not swing the load as this can put strain on the back and may result in an injury

If moving to another location, move the feet slowly and co-ordinate the movement with your lifting partner.

Minor adjustments may be necessary, depending upon trolley design or whether the bench is high or low

Wherever possible, trolleys that are the same height as the bench should be used as this puts considerably less strain on the back, i.e. the load can be slid rather than lifted from the bench to trolley

Moving very large items (two person lift)

For example: fridge/freezer, filing cabinets, drying cabinets

These should be moved using a trolley.

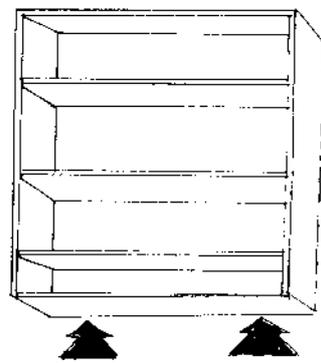
- Empty the cabinet/fridge and remove any trays, shelves or drawers
- Move slightly forwards away from the wall
- The other person then moves their edge out
- Where access is difficult, it may be necessary to pull out from the front on one or both sides
- Remember to take your time



- When the unit is out of its normal location, crouch with one foot slightly forward of the other
- Push the load to raise it slightly at the front using the hand on the same side as the forward foot so the stress is on the outside of the body
- Use the other hand to grasp the load from underneath and continue to raise it slightly

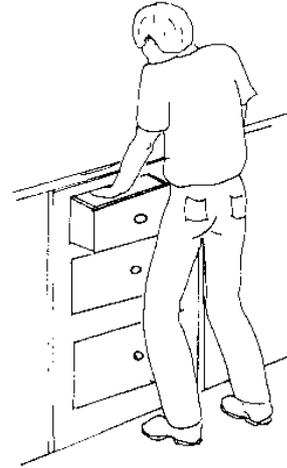


- The other person should then position the forks of a sack trolley in the middle of the cabinet
- Allow the load to drop back gently onto the trolley while the second person has a foot on the axle of the trolley
- Gently ease back the load while the other person still has a foot on the axle until the load is balanced
- You should then assist in pushing off the load and ensure that it is stable on the trolley
- If necessary, secure the load to the trolley

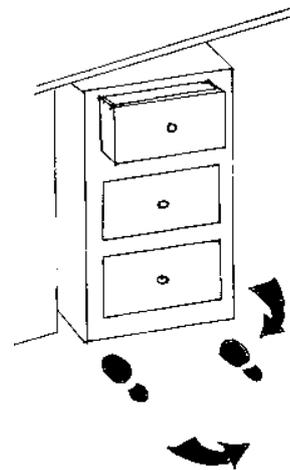


Moving under-bench cupboards

- Face on to the cupboard with knees slightly flexed and one foot in front of the other
- Open the top drawer and insert the hands palm upwards
- Grasp the front edge of the cupboard and pull one edge outwards (towards the back foot)



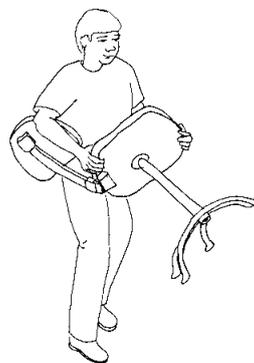
- Move the other foot back and repeat the process with the other edge
- Carry on repeating this process with alternate sides, gradually easing the cabinet out of its position until clear of the bench
- When clear of the bench, the cabinet may then be slid onto a trolley



Awkward loads (one person lift)

For example: 5 leg chairs

- Flex the knees slightly
- Grasp the back rest and the front edge of the seat, or the seat base with both hands, using the elbow against the back rest for support during movement
- Lift using the legs for thrust
- Rest against the near hip so that the chair base is pointing away from you
- Move off
- When lowering, do so slowly and bend your knees, not your back



Long narrow loads (one person lift)

For example: metal rods, pipes, lengths of wood

- Place a strong box or low platform at the far end of the load
- Crouch with one foot in front of the other and grasp the load at the near end
- Raise the load to a vertical position



- Readjust your grip using the near hand to support the load approximately three quarters of the way up its height



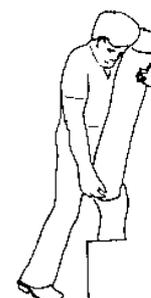
- Using the other hand, lift the load from underneath and lift it on to the platform



- Readjust your stance
- Keeping the back straight and knees flexed, lift the load to a vertical position
- Remember, lift with our legs, not your back



- Adjust your body position to an upright stance holding the load as close to your body as possible
- Move off
- When replacing the load, repeat the above steps in the opposite order



Gas cylinders (one person)

Since cylinders are heavy and awkward to handle, they require special care and equipment in handling and securing so that they don't fall or tip over causing an injury. Most accidents or injuries involving cylinders happen when moving or handling them.

Transport of gas cylinders is probably the most potentially dangerous of all routine laboratory manual handling tasks.

Cylinders must always be transported in a purpose designed trolley – never attempt to move a cylinder with a neck higher than your shoulder. Do not lift by the protective cap/guard or use magnets, chains or slings to lift or move them since valves may be damaged or sheared off.

Steel toe capped shoes and industrial quality gloves should be worn when moving large numbers of cylinders e.g. when taking a delivery.

- Undo the securing bars on the trolley and place near/under the cylinder
- Unhook the chain from the rack and place the palm of your hand on top of the cylinder neck
- Tilt the cylinder slightly forward so it rests on the rim of the base and use the other hand to rotate the cylinder 'milk churning' it from the rack to the trolley



- Fasten the securing bars on the trolley
- Place one foot on the axle and tilt the trolley back so it balances comfortably on the wheels
- Move off and set the trolley down in front of the wall rack or bench clamp in the laboratory
- Remove the cylinder from the trolley, 'milk churning' it into its new position



- Make sure that the cylinder is secured to the wall rack or bench clamp in the laboratory
- Never stand a cylinder, even a small one, on its base unsupported
- Never transport cylinders with the pressure regulator and hose attached unless on a purpose designed trolley or carrier

