

Manual Handling in Libraries

A guide to reducing injuries from manual handling in libraries

INTRODUCTION

A Working Group of the Universities Safety Association was formed in 1998 to address concerns about a number of manual handling issues that appeared to be specific for libraries. The Group currently consists of library staff, health and safety advisers, occupational health nurses and an ergonomist, comprising 30 individuals from 18 higher education institutions. The Topic Group carried out discussions by e-mail and periodic meetings. Contributors are shown in [Appendix A](#).

The guidance in this document has been produced as a result of these discussions to assist library managers and health and safety personnel to address manual handling risks. **In the absence of detailed risk studies, the guidance must be considered as interim in nature and subject to updating in the light of experience.**

1. GENERAL CONSIDERATIONS

Universities have clear legal duties under the *Health and Safety at Work etc Act, 1974* and various [Regulations](#) to address manual handling hazards in libraries. These are summarised in [Appendix B](#).

As far as practicable, the layout of libraries should seek to eliminate congestion and provide sufficient working space to carry out handling operations without interfering with other activities.

Library staff must make a careful assessment of manual handling risks. Particular attentions should be given to:

- book issue and return;
- re-shelving books; and
- use of trolleys.

Relevant general guidance on assessment is given in *A Guide to Manual materials Handling* (Mital, Nicholson & Ayub; 2nd Edition; published by Taylor & Francis; ISBN 0-7484-0728-6). The assessment tool featured in the HSE Specialist Report *Evaluating Changes in Exposure to Musculoskeletal Disorders* (HSE Books; ISBN 0-7176-1722-X) may be useful.

Identified risks should be either eliminated or adequately controlled in consultation with the staff concerned. Staff should receive information on risks and instruction and training on safe methods of work. Where appropriate, there should be occupational health monitoring.

Health and Safety issues in libraries should not be seen in isolation from other management issues. Reduction of risk from manual handling injuries could involve:

- selection of staff and equal opportunities issues;
- job descriptions and patterns of working;
- design of facilities and equipment;
- the way books are arranged and packed on shelves;
- sizes of bound periodical volumes;
- monitoring the health of staff; and
- adequate training and supervision.

Arrangements must include temporary and casual employees.

2. RE-SHELVING BOOKS

POTENTIAL HAZARDS. Loads are generally not heavy, though some problems may be encountered with very large folios etc. Re-shelving may, however, require the adoption of awkward body postures. The action of shelving involves inserting another book into the shelves (normally with the dominant hand). The book must be held in a tight pinch grip and, normally, adjacent books must be thrust aside. Exertion of considerable force may be needed if the shelves are tightly packed. This may lead to the development of pains in the back, shoulders, arms or hands. Shelves may also choose to hold a heavy pile of books in the other (non-dominant) hand, which may also lead to problems.

The development of symptoms will be influenced by work patterns. Many libraries are now employing dedicated shelvers who, while often working part-time, do nothing other than re-shelve books. Libraries should review the job descriptions of shelvers and, where practicable, incorporate periods of other types of activity to reduce the risk of injury. Otherwise, shelvers must be allowed regular rest periods during their shifts.

LIBRARY MANAGEMENT. The prevention of injury to shelvers and other book users should be an important factor when the design and stocking of library shelves is considered. This is particularly critical in heavily used areas. The following practices should aid the work of shelvers:

- shelves should not be tightly packed with books. There should be a policy of removing infrequently used books to compensate for new acquisitions;
- very heavy books, where practicable, should be located at around waist height;
- libraries should have a clear policy on bookbinding, journals should not be bound into very large volumes;
- where practicable, shelves should be no higher than an adult of average size; otherwise kick-stools or steps must be provided to allow shelvers to reach the shelves safely without having to lift books above shoulder height; if shelves are

very high, steps should be provided with handrails and a fenced working platform to guard against falls;

- where practicable, the lowest stocked shelf should be at least 30 cm from the ground (it may be convenient for shelvers to sit on kick-stools of suitable design while re-shelving books on the lower shelves.
- If practicable, aisles etc should be sufficiently wide to allow trolleys to be brought as close as possible to the shelves;
- “high-grip” gloves may lessen the force needed to grip books and hence reduce the risk of injury (however, they may be uncomfortable to wear for long periods);
- it may be possible to provide some support for carried books (e.g. by resting them on a “bum-bag”); and
- regular exercise is recommended.

Risk assessments should determine whether special arrangements are necessary (e.g. two-person lifts) for handling very large or awkward books.

HEALTH SURVEILLANCE. Libraries should ensure that shelvers are encouraged to report persistent pains in the back, shoulders, arms or hands. The working practices of staff making such reports should be examined and appropriate, suggestions for improvement made. The situation should be monitored and, if pain is still experienced, the person should be advised to seek medical advice, either from the person advising the University on occupational health matters or his/her GP. Health surveillance must be provided if risk assessments determine that it is necessary. It may take the form of a periodic health questionnaire with appropriate follow up.

INFORMATION, INSTRUCTION AND TRAINING. Shelvers should receive thorough training before starting work, adequate supervision and periodic refresher training. Topics covered should include:

- potential health and safety hazards;
- use of trolleys, steps and kick-stools;
- maximum weights to be carried;
- re-shelving techniques;
- operations requiring two people; and
- reporting accidents and ill health that may be work-related.

An outline of a possible course is given in **Appendix C**. Shelvers should be given a written summary of good working practices. The booklet *Battling with Books* published by Anglia Polytechnic University may be suitable (obtainable from Margie Mason, tel. 01245-493131).

3. BOOK ISSUE AND RETURN

POTENTIAL HAZARDS. Staff have to take books from borrowers and process them. This normally involves stamping and desensitising them before handing them back to the borrower. Operations which could lead to work related upper limb disorders include:

- repeated awkward or long reaches;
- awkward twisting movements.
- lifting heavy books; and

- inefficient scanning/desensitisation/book stamping techniques (e.g. having to swipe bar codes several times).

Problems may be compounded by long work stints, lack of task rotation and uncomfortable working position.

ISSUE DESK DESIGN. The following should be considered:

- desk heights should be suitable for both the borrower and the book issuer;
- it may be necessary to provide raised seating or a platform for the issuer or, alternatively, desks with built-in height adjustment;
- a section of lower desking may be necessary to cater for wheelchair users.
- it may be helpful to require borrowers to hand staff books or place them on a specified area of the desk;
- a bag rack should be provided for the borrower;
- seating, if provided, must be comfortable; chairs should be adjustable in height and should have adjustable back and foot rests; if necessary; the chair should swivel to avoid the need for twisting movements of the back; there should be adequate space for the legs so that staff can sit close to desks;
- if the issuer is standing, appropriate footwear must be worn and their posture should distribute their weight evenly between both feet; the provision of an anti-fatigue floor surface will reduce discomfort; periodic rest breaks and/or changes in activities are desirable;
- there should be sufficient space;
- work stations, reception desks and associated equipment (such as display screens and desensitisers) should be designed and set up so that books can be held as close to the body as practicable and awkward movements such as excessive reaching eliminated;
- use of light pen/wand readers may lead to poor finger and wrist postures and prove inefficient in use;
- location of bar codes on the outside would eliminate the need to open books but may not be practicable if date stamping is considered essential;
- where practicable, desensitisers should be inset into the desk surface to avoid having to lift books during processing;
- display screen workstations should be set up in compliance with *Health and Safety (Display Screen Equipment) Regulations, 1992* .

The Australian Services Union publication *Library Design Guidelines* by John Herring and Peter Wilson contains useful guidance and can be obtained through Inter Library Loans (quoting reference NM81618-Y). There are parallels with supermarket checkouts and the following HSE publications may be useful:

- *Checkouts and musculoskeletal Disorders* (INDG269) free from HSE Books; and
- *Musculoskeletal Disorders in Supermarket Cashiers* (ISBN 0-7176-0831-X; £20.00; HSE Books).

HEALTH MONITORING. As for shelvers (see above).

INFORMATION, INSTRUCTION AND TRAINING. Staff should be advised:

- how to adjust their seating, foot rests and (if appropriate) desk height to produce a comfortable and efficient working position;
- how to carry out operations so as to minimise risk of injury; and

- to report any unusual or painful sensations in their back, shoulders, arms or fingers and any problems with equipment etc to their supervisor.
- Staff should be given a written summary of good working practices. The booklet *Battling with Books* (especially pages 8-10) may be suitable.

4. USE OF TROLLEYS

POTENTIAL HAZARDS. The main occupational health risk is injury to backs. A fully loaded trolley may be very heavy to push or pull, particularly if the wheels are small with simple bearings. Frictional resistance will be increased on carpeted floors and uneven surfaces, ramps, steps and differences in floor level (e.g. into lifts) may also cause difficulty. Some trolleys may be difficult to steer and handles may be inconveniently positioned. Stooping to load/unload the lower shelves may put undue strain on the back.

Health and safety risks include:

- trolleys overturning because they have been incorrectly loaded or manoeuvred;
- books falling off;
- trolleys collapsing by being overloaded or as a result of poor design nor inadequate maintenance;
- trolleys that are heavy to push and manoeuvre; and
- injuries on sharp edges and corners.

TROLLEY DESIGN. Trolleys may be required for a variety of different tasks e.g.:

- re-shelving;
- cataloguing;
- mobile book displays; or
- moving outside books, book boxes etc.

Libraries should select trolleys that are appropriate for specific applications. The Topic Group was not able to identify an “ideal” trolley but the following design criteria should be born in mind when selecting equipment:

- ease of manoeuvrability on all surfaces encountered (including changes of level);
- good quality wheel bearings;
- providing sufficient foot space to allow a natural walking gait;
- handles at a convenient height/angle, easy to grip and preferably adjustable;
- retention of mobility and stability at all loads;
- reasonable capacity;
- adequate means (angled shelving etc) to prevent books falling off accidentally; and
- contents at a convenient working height.

Some general guidance on trolley design is given in the HSE publication *Manual Handling – Solutions you can Handle* (ISBN 0-7176-09693) and advice on risk assessment in *Manual handling Operations – Guidance on regulations* (L23; ISBN 0-7176-2415-3). The Australian Services Union publication referred to in **Section 3** above also contains useful guidance.

The Topic Group did not think that it would be appropriate to recommend particular designs of trolleys. A list of trolley suppliers is given in [Appendix D](#). Some of these suppliers will customise trolley to suit the specific needs of customers and/or loan trolleys on approval. Prospective purchasers are strongly advised, with the co-operation of the supplier, to seek the views of other customers.

TROLLEY ROUTES should be designed, as far as practicable, to reduce twists, turns and to eliminate gradients. It should be possible to move trolleys close enough to shelves to allow direct reshelving. Floor coverings should provide the feet with sufficient grip without producing excessive frictional resistance.

INFORMATION, INSTRUCTION AND TRAINING: see [Appendix C](#) and *Battling with Books*.

5. OTHER OPERATIONS

BOOK RETURN BOXES. Most libraries have arrangements to allow borrowers to return books directly. Choice of designs appears limited. Most return boxes are metal cubes on castors and may be very heavy when full.

- They should be fitted with a spring-loaded platform so that the contents are kept at a convenient working height and people do not have to stoop to retrieve books from the bottom of the box.
- Books should not be able to slip under the platform.
- The platform, and if practicable, the inside of the box may be padded to reduce damage to books.
- Handles should be provided at a convenient height and the wheels/castors should be of reasonable diameter and tread width with good quality bearings.
- Manoeuvring may be facilitated by having two fixed and two swivelling wheels with the fixed set furthest from the operator.
- Training should be similar to that for trolley users.

HEAVY ITEMS may include book boxes for continuing studies courses, interlibrary loan packages, cash boxes etc. Containers should be of a suitable size and overfilling be actively discouraged. Where practicable, heavy items should be moved using trolleys or other aid. Staff should assess the task before attempting to move items and be instructed to refuse to move over-weight items.

MANUALLY OPERATED MOVABLE STACKS must be kept in good repair with well-lubricated mechanisms so that they move easily and smoothly. Tracks and aisles must be kept clear of obstructions and operators must ensure that people do not become trapped between stacks.

GENERAL MANUAL HANDLING ISSUES. Much manual handling undertaken will not be specific to libraries (e.g. lifting boxes of photocopier paper). Standard manual handling guidance such as that given in the HSE publications *Manual*

Handling – Solutions you can Handle (ISBN 0-7176-09693) and *Manual handling Operations – Guidance on regulations* (L23; ISBN 0-7176-2415-3) will apply to most of these tasks.

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APPENDIX A

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University of Reading	Ian Burn, Library Support Services Manager (Representing the Standing Conference of National and University Libraries)
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APPENDIX B

LEGAL ASPECTS

The main relevant legal requirements for employers are as follows.

Universities have a duty under Section 2 of the *Health and Safety at Work Act etc, 1974* to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all staff. This includes arrangements for the use, handling, storage and transport of articles and substances. There is also a duty under *the Manual Handling Operators, 1992* to avoid the need for employees to undertake manual handling operations which involve a risk of injury, and, where this is not reasonably practicable:

- make a suitable and sufficient assessment of risk (having regard to the factors and questions specified in the schedules to the Regulations); and
- take appropriate steps to reduce the risk of injury to the lowest level reasonably practicable.

Employers also have a duty under the *Provision and Use of Work Equipment Regulations, 1998* to ensure that work equipment is only used under conditions for which it is suitable, that it is maintained in an efficient state, in efficient working order and good repair. Employees must have:

- adequate health and safety information pertaining to the use of equipment;
- appropriate written instructions; and
- adequate training for the purposes of health and safety.

There are general requirements under the *Management of Health and Safety at Work Regulations, 1999* to carry out risk assessments (including risks to young persons and women of childbearing age) and to provide employees with such health surveillance as is appropriate and to provide:

- comprehensive and relevant information on risks to health and safety identified by risk assessments and the preventative and protective measures; and
- adequate health and safety training.

General requirements to provide a healthy and safe workplace and adequate welfare facilities (such as rest areas) the *Workplace (Health, Safety and Welfare) Regulations, 1992*.

APPENDIX C

MANUAL HANDLING FOR SHELVERS – OUTLINE OF A POSSIBLE TRAINING COURSE

OBJECTIVES. At the end of this session you should be able to move a trolley correctly and use a kick-step, work at height and lift and carry books safely.

USE OF TROLLEYS. Loading: Do not overload a trolley. If an overloaded trolley needs moving, remove some of the load first.

- Do not leave oversize books sticking out on the lower shelves;
- find the best route involving least manoeuvres;
- if you cannot move a trolley by yourself, ask for assistance in moving the load;
- make sure you have a good grip on the trolley handles; push the trolley rather than pull it; lean in the direction you are pushing; and
- stay close to the trolley and let your body weight and leg muscles do the work for you.

USE OF KICK-STEPS

- Always place both feet on the top of the kick-step;
- if you are using the kick-step a lot, alternate the foot with which you step up; and
- when shelving on the lower shelves, use a kick-step to sit on.

SHELVING AT HEIGHT

- Extra care must be taken when working at height, kick-steps may not be appropriate if the load is very heavy (steps, preferably with a handrail, are preferable):
- avoid twisting your body as you lift, try to keep your back straight; and
- use two hands to lift and shelve.

SHELVING

- When moving several books at once from the shelves, never extend your hand span;
- reach over with one hand to the back of the books, pull them out with that hand and support them underneath with the other;
- to avoid stress on arm muscles, do not try to force a book into a tight space;
- do not put books on bays after the last shelf divider, as they are not secure; and
- move the shelf divider first to create more room.

LIFTING/CARRYING BOOKS

- If you are lifting lowering books, always do so by bending your knees and not your back. When carrying always keep your arms tucked in and hold the load as close to the body as possible;
- never carry a load that is too heavy for you; either break it down to make it lighter or seek assistance;
- ensure that loads do not obscure your vision;
- beware of objects on the floor;
- make sure you do not carry too many books down the stairs and always leave a free hand for use on the handrail; and
- wherever possible shelve directly from a trolley.

This advice could be combined with pages 12-14 of *Battling with Books*.

APPENDIX D

SOME SUPPLIERS OF LIBRARY BOOK TROLLEYS

Arco Cleveland	Malleable Way, Stockton-on-Tees Tel 01642-617441 Fax 01642-617025
Don Greswell Ltd	Grange House, 2 Geddings Road, Hoddeston, Herts EN11 0NT Tel 01992-45451 Freefax 0800-616634 Email direct@greswell.co.uk http://www.greswell.co.uk
LFC Library Supplies	Phonix House, 54 Dennington Road, Wellingborough NN2 2BR Freephone 0800-616621; freefax 0800-616629 http://www.lfc-ltd.co.uk
Reska Products Ltd	Mount House, Bond Avenue, Bletchley, Milton Keynes, MK1 1SD Freephone 0800-919220; Freefax 0800-413364 Tel 01908-371001; Fax 01908-365352 Email info@reska.co.uk http://www.reska.co.uk
Serota	92 Hillyard Road, Northwood, Middlesex HA6 1SW Tel/Fax 01923-840697
Specialised Storage Systems	6-8 Town Street, Batley, West Yorkshire, WF17 6BX Tel 01924-439800; Fax 01924-439801