PREVENTING INJURY IN THE LIBRARY

A GUIDE FOR LIBRARY EMPLOYEES

Ergonomics for Shelving and Library Materials Handling

Health, Safety and Environmental Management System
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Version # 1.5 Created Aug 2011. Last Revision Date: Sept 7, 2011
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How to Use this Document
This document provides basic tools that will allow you to work safely in the library environment with the aim of reducing the risk of musculoskeletal injuries and protecting your health. It provides practical advice on material handling in the library, ergonomic factors, stretches, and the nature of musculoskeletal injuries. For more information, visit www.usask.ca/hsems.

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Disclaimer
The guidelines presented in this manual are voluntary and may not be suitable in every situation. This guide is not intended to address specific injuries, restrictions or medical conditions. In these situations an ergonomic professional should be consulted. A formal ergonomic evaluation for personnel with preventative concerns or ongoing musculoskeletal symptoms can be requested by contacting the library’s Director of Financial and Physical Resources in the Dean’s Office. If you are experiencing significant pain, discomfort or other musculoskeletal symptoms, then consult a health care professional.
Preventing Injury in the Library

• As an employee of the library, both you and your employer are responsible for injury prevention in the workplace.

• It is your responsibility to be aware of any of your actions that may put you at risk for injury and take steps to work safely.

• The library is responsible for informing you of the risks of injury in your job and providing you with the proper tools, training, and information to minimize these risks. If you feel that there is something unsafe in your working environment, inform your supervisor.

• Library employees may be required to perform tasks that are repetitive in nature and injuries may occur if adequate steps in preventing injuries are not taken.

• If aspects of your work are repetitive, symptoms of repetitive strain/cumulative trauma injuries may occur. Such symptoms may be minimized with early identification and appropriate management.

Components of the Musculoskeletal System

The main components of the musculoskeletal system are:

• **Ligaments** – dense, strong, fibrous tissue that joins bone to bone, usually crossing a joint. Provide stability to joints. Tend to heal slowly due to poor blood supply.

• **Tendons** – strong, more elastic, fibrous tissue that connects muscle to bone. Some run in sheaths that provide lubrication and protection.

• **Muscles** – the main tissue that generates force to move the body. Injuries to muscle heal relatively quickly due to their excellent blood supply.

• **Joints** – allow the body to move by allowing a point of articulation between adjacent bones. Have several structures such as articular cartilage, fluid, and capsule to perform this function.

• **Nerves** – these allow communication between the brain and almost all structures of the body. Motor nerves signal the muscles to contract and sensory nerves relay feedback signals from muscles, tendons, ligaments and joint structures to allow for smooth coordinated movement and proprioception or the sense of where the body segments are in space.

• **Blood Vessels** – provide nutrition to almost all structures in the body to enable their function, maintenance, and repair.
What Causes Injuries?

Certain ergonomic risk factors can lead to fatigue, discomfort, or pain. These include:

- Exerting **force** to perform a task or to use a tool.
- Working in **awkward postures**, such as bending or twisting the back, overhead reaching, kneeling, or stooping.
- Actions that are repeated rapidly over and over in the same pattern of movement with inadequate rest.
- Remaining in a **sustained posture** for a long time with little or no movement.
- Continuous pressure from a hard surface or edge on any part of the body (**contact stress**).
- Working in **hot or cold** temperatures.
- Holding equipment that **vibrates** (for example, the handle of a pressure washer).

**Watch for these signs & symptoms:**

- **Symptoms** (what you may feel): pain, numbness, tingling, or weakness.
- **Signs** (what you may observe): swelling, warmth, redness or bruising.

**Decreased function** (loss of range of motion and/or strength)

If You Develop Any Symptoms

- **Talk** with your supervisor about your symptoms right away.
- **Seek** medical attention to assess the problem and recommend appropriate treatment, especially if your symptoms do not decrease or go away within a few days, if they increase, or if they continue to recur.
- **Consult** with your supervisor to determine the root cause and determine if workplace modifications are required.

What Can You Do Right Away?

For minor pain and swelling, you can try the **RICE** principle:

- **Rest**: try to rest the area as soon as you are able to. Try not to do the same activity for an extended period of time.

- **Ice**: you can put ice on the area 15-20 minutes every hour with a teacloth or paper towel in between as a buffer. A commercial ice pack is best but you can also use frozen unpopped popcorn kernels, or bagged crushed ice for difficult areas (shoulder, neck, elbow, wrist).

- **Compression**: to help decrease swelling and pain. For example, use a tensor bandage for a wrist, elbow, knee or ankle.

- **Elevation**: try to elevate the area to decrease swelling. For example, put your arm up on a pillow so it is above the level of your heart while you are sitting or lying down.
General Upper Body Stretches

These can be performed at any time to prevent or help alleviate symptoms. The stretches below focus on the upper body, arms and hands which is where the majority of overuse injuries occur.
Injury Reporting

1. All faculty and staff should report any injury as soon as possible to their supervisor.

2. All faculty and staff must complete an Incident Report Form found on the WSEP website, http://www.usask.ca/wsep/. The report is submitted to WSEP in electronic form. Please note: the incident report is an internal U of S document and completing one does not generate a Worker’s Compensation Board claim.

WORKER’S COMPENSATION

3. At this time faculty and teaching professions are exempt from the Worker’s Compensation Board legislation, and time loss due to work injury is covered under their disability plans.

When a staff member requires medical attention (i.e. is seen by a Doctor) and/or misses time from work after the first day of a workplace injury, the employer is obligated to file a report with the Worker’s Compensation Board (WCB). Please contact the library’s Director of Human Resources, as soon as you become aware of an injury, to assist in the reporting process. The supervisor must complete a WCB E1 form within 5 days of being made aware of the injury.
The Spine

The human spine forms the core of the musculoskeletal system and it is robust and sturdy while being subject to significant mechanical forces. When respected and properly maintained, the spine serves us well despite its reputation as a vulnerable part of the body.

The spine is composed of 24 vertebrae in three regions: lumbar (5) or low back, thoracic (12) or where the 12 pairs of ribs attach, and cervical (7) which comprise the neck. The vertebrae are connected by discs and strong ligaments. The spine protects the spinal cord and a pair of spinal nerves exits between each vertebrae. The triangular bone at the base of the spine is called the sacrum.

The spine, viewed from the side has an S shape. The thoracic region has a curve called a kyphosis. The cervical and lumbar regions have a curve called the lordosis.

The spine is subject to certain mechanical problems, which can be minimized or avoided by maintaining spinal flexibility and trunk muscle fitness, keeping active, and having a good level of aerobic fitness, minimizing excessive forces applied to the spine from heavy material handling, using good body mechanics for all daily activities, and maintaining good posture when sitting, standing or lying.

Mechanical back problems include muscular strain, ligament sprains, joint problems (stiffness, hypermobility, and arthritis), disc bulges and herniations, and nerve root compression. While most adults (80%) will experience low back pain at some point in their life, most back pain is self-limiting and 90% of acute cases will recover within 6 weeks.
Basic Lifting Body Mechanics

- To begin: Plan the lift if it is unfamiliar. Make sure the area is clear and you are not confined in your movements. Ensure that the path and area you are moving to are clear and ready.

- The spine is best protected from injury when it is kept in a “neutral” position. This means maintaining the normal curves of the spine. In this position there is less stress on the discs, joints, ligaments and muscles of the spine.

- Keep the weight or load as close as possible to the body. This greatly reduces the forces on the spine.
- Use a wide base of support for stability.
- Avoid twisting when lifting.
- Lift smoothly and do not use excess inertia.
- Avoid lifting with the knees straight and the spine flexed. This puts the discs under increased pressure, the ligaments on stretch, and the muscles at a disadvantageous length to function efficiently.
High Shelving

- Use a step stool to reduce the height of reaching and lifting when retrieving books. This reduces stress on the shoulder and neck and maintains a stable base of support. Ensure the stool is in good condition.

- Avoid reaching over your head to retrieve books on higher shelves. This places the shoulder and neck at risk for strain. Standing on the toes may result in loss of balance.
Low Shelving

- Avoid bending at the waist, especially for longer periods of time. Sustained bending can be very stressful on the spinal discs. Support your body with the other arm if this position is unavoidable.

- Keep the spine neutral and use the legs to raise and lower your body.

- Use a stool if the position will be prolonged. This is preferable to kneeling or stooping to avoid extra stress on the low back.
Carrying

- Avoid carrying large numbers of books especially using only one arm. This places an extra load on the arm and is generally awkward for the wrist.

- Carry a few items only, or use a truck to eliminate carrying altogether, if practical. This lessens and spreads the load and enables more neutral joint angles.

- Avoid carrying books on stairs if possible. Use book lifts if they are available. If not, then carry a smaller number of books to avoid obstructing your view and allow one hand to use the handrail.
Do not grasp a large batch of books with a wide hand grip. This places a large stress on the thumb, wrist and fingers.

It is better to grasp a thinner batch of books each time.

- Avoid using a tip pinch/pincer grip to retrieve books. This places extra stress on the finger joints.
- Ensure books are not packed too tightly by loosening the book holders.

- Use a palmar grip with all fingers to retrieve books. This is a less awkward and more powerful grip.

- Do not grasp a large batch of books with a wide hand grip. This places a large stress on the thumb, wrist and fingers.
- It is better to grasp a thinner batch of books each time.
Avoid awkward wrist angles when handling books.
Try to keep the wrists as straight as possible to avoid unnecessary strain.

Use two hands to handle large or heavy volumes when shelving. This halves the load on each arm and hand.

Use two hands to carry large or heavy volumes.
Use book trucks to carry large kits.
Book Trucks

- Book trucks should be in good repair.
- Do not use a truck that is damaged.
- Do not overload trucks as they will be hard to push and maneuver.
- Use the upper shelf mostly to avoid bending.

- Use two hands to push the truck.
- Avoid pulling trucks. Pushing is more efficient and safer.
- Keep the truck close to the body, giving enough room to move your feet.

- Do not push trucks from the side.
- This creates unnecessary torque loading on the spine.
- Do not lift the truck to overcome obstacles such as uneven floor surfaces or transitions.
- Move carts close to the area where you are reshelving.
Book Truck Loading

- Avoid loading books on the bottom shelf to reduce crouching and kneeling.
- Books should be placed with the spines up so the call numbers are easily visible.
- Books can be stacked as a double row if required, but not so as to overload the cart. If the cart becomes difficult to maneuver, remove some books.
- A single row on the top shelf will provide a better grip on the cart.

Initial Sorting for Easy Shelving

- When picking up library materials to be re-shelved, rough sort items the first time you handle them.
- Rough sorting enables the staff member to organize shelving trucks with a minimum of bending.
- You can fine sort all of the items on each shelf of the cart before moving on to the next shelf.
Handling Oversize and Awkward Items – Tubed Items

- Some items such as materials in tubes can be awkward to handle even though not particularly heavy
- General manual handling principles apply

- Keep the item close to your body
- Avoid above shoulder movements as much as possible
- Avoid excessive forward reaching if possible
- Get help handling the item if possible
Handling Oversize and Awkward Items – Magazine Holders

- Items in magazine holders can be awkward as they may spill out if mishandled
- The contents may shift if not packed tightly and this can make the load unstable to handle

- Always handle the items with two hands and support from below if possible
- Be aware that the contents may shift and angle the box towards you if this is the case
Handling Oversize and Awkward Items – Boxed Items

- Items in boxes may be heavier than anticipated. Test the weight of the item before you attempt to move it
- Boxes may open suddenly or the contents may shift

- Familiarize yourself with how the boxes open and hold the box accordingly before you attempt to move it
- Handle only one item at a time
- Get help if the item is particularly heavy or large
Handling Oversize and Awkward Items – Very Large Volumes, Bundled Items, Microfiche

- Very large volumes such as atlases can be heavy and awkward
- Keep this items close to the body when lifting
- Use good lifting technique when moving these items on lower shelves

- Paper bundles can be awkward as the papers may shift
- Use two hands to handle these items

- Microfiche can be difficult to handle as the finger movements required are fine and occasionally forceful if the films are packed tightly
- Use two hands if the films are difficult to retrieve
Handling Oversize and Awkward Items – Maps and Map Cases

- Map drawers can stick and be difficult to open.
- Always use two hands on the handles to open and close these drawers.

- Maps that are at the bottom of a heavier pile can be difficult to extract.
- Move some other maps out to reduce the friction.

- Slide the maps as much as possible.

- If the items are difficult to handle, then get help.