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A DND/CF Guide to Office Ergonomics

Canada

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INTRODUCTION

This Guide has been produced to raise the awareness of CF members and DND employees of the ergonomic hazards they can encounter in the many office environments we experience in the DND/CF. It is not intended to make the reader an "instant" expert on ergonomics – this is a field of growing impact and complexity that requires a good deal of formal education, training and experience.

Nonetheless, there are basic measures that individuals can employ to reduce the likelihood that they will suffer injury as a result of ergonomic hazards and the contents of this Guide can assist in that process.

The Guide has been limited to the office environment, because, frankly, there are too many other types of specialized situation in the DND/CF to handle in a document of this size. That being said, efforts to deal with ergonomic issues pertinent to other areas of DND/CF endeavour will become of increasing importance as our experience and expertise grows in those areas and additional guidance may be expected in the future.

The Directorate of General Safety (D Safe G) is indebted to the Canadian Centre for Occupational Health and Safety (CCOHS) for allowing us to liberally draw upon the contents of their own guide, *Office Ergonomics, Safety Guide (http://www.ccohs.ca)*; and, to Health Canada's, Workplace Health and Public Safety Programme for permitting us to reproduce the diagram at Annex A.

We hope that you will find this small publication of use and encourage you to offer comments and recommendations for change to:

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Carpal Tunnel Syndrome
Stops Your Fingers From Doing the Walking
Fi au syndrome métacarpien,
qui empêche les doigts de fonctionner!
Canada

OFFICE ERGONOMICS

Ergonomics is the study of adapting equipment, procedures and surroundings to the individual. Paying attention to human factors at work can reduce injuries and improve quality and production. Instead of forcing the worker to adapt to the task, tool or work environment, the job and equipment is adapted to the worker.

SCOPE

This guide is applicable to office work and covers factors that contribute to compatibility between workers and office work. It covers ergonomic aspects of the workstation, work organization, the work environment and recommended safe work practices.

This guide is for:

- CF members and DND Public Service personnel.
- Civilian personnel employed by DND or CF commands, areas, formations, bases, stations and units such as contractors, direct hire terms, casual hire, summer student employees and Non-Public Fund (NPF) Employees when on duty and/or on DND property.

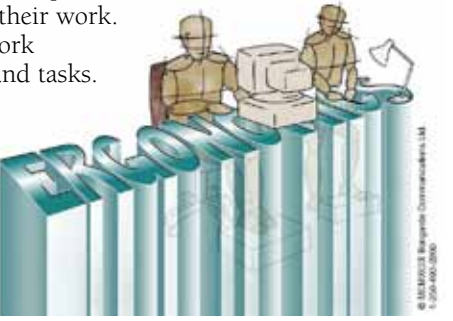
OBJECTIVES

This guide will enable you to:

- Develop an understanding of the basic elements of office ergonomics.
- Identify tasks that can potentially cause work-related musculoskeletal disorders (WMSD) and other injuries to the muscles and joints.
- Understand an Internal Office Ergonomics Program.

INTRODUCTION TO ERGONOMICS

Ergonomics deals with the compatibility between workers and their work. "Work" is made up of the work environment, workstations and tasks. Poor ergonomic conditions exist when the "work" is incompatible with the workers'bodies and their ability to continue working. Such conditions may cause discomfort, fatigue and pain, subsequently, injury.



Injuries resulting from poor ergonomic conditions are collectively known as musculoskeletal injuries (MSI), repetitive strain injuries (RSI) or work-related musculoskeletal disorders (WMSD). The causes of the injuries are prolonged work involving repetitive movements, forceful movements and awkward body postures. WMSD are painful and often disabling injuries which affect mainly the wrists, back, legs, shoulders, neck, muscles and joints.

Adequate environmental conditions are important for the overall well being of workers and productivity. When the work area is too cold or too hot, poorly lit, noisy, poorly ventilated, or contains unpleasant odours it results in annoyance, stress, fatigue, eye strain, headache and other conditions.

Injuries and illnesses related to poor ergonomic conditions can be prevented by making the workplace and the work organization fit the physical and mental ability of each individual worker.

DND INTERNAL OFFICE ERGONOMICS PROGRAM

The DND Internal Office Ergonomics Program (IEP) is a subordinate program within the General Safety Program. It is targeted to civilian employee office ergonomics while that for the CF falls within the mandate of Force Health Protection. Economies of effort will be realized whenever possible.

The object of the IEP is to reduce risks from office ergonomics hazards using a systematic approach with good management oversight. Training and education are important for working safely and keeping well. Even the best work organization and workplace design cannot prevent WMSD if an ergonomics program is not adequate.

The contents of the IEP include risk factors that can cause WMSD and proper work practices to prevent WMSD. Also, workers are able to adjust their chair, desk, monitor, keyboard, mouse and workstation in order to prevent WMSD.

This program has a proactive approach in attacking ergonomic hazards before they become a problem.

To be successful, the training program must be organized, consistent and ongoing. Everyone should be involved, including workers, management and health and safety representatives.

Components in the IEP include:

- Hazard identification: worksite evaluation.
- Implement solutions: workplace condition and work practices improvements.
- Workers'education and training: empowering workers to work safely.
- Evaluating effectiveness of solutions.
- Continuous improvement of the program for better results.

WORK-RELATED MUSCULOSKELETAL DISORDERS (WMSD)

WMSD are injuries that involve muscles and tissues connecting bones, namely tendons and ligaments. Office work presents risks of WMSD due to:

- Fixed and constrained postures – awkward sitting posture.
- Repetitive movements of joints – operating mouse .
- Excessive force – operating mouse or keyboarding.
- Contact stress between: elbows and work surface, wrists and keyboard tray, or back of the knees and seat pan.
- Material handling – lifting, lowering, or carrying boxes.

All of these risks are increased by a high pace of movement or not allowing for sufficient time for recovery from the effects of these movements or postures.

Depending on the nature of the job, the most frequently affected parts of the body are the torso, including the lower back, shoulders, neck, arms and wrists. Long periods (months to years) of work in poorly designed workplaces increase the risk of WMSD.

Causes of WMSD

The following are the three main causes of WMSD:

- Repetition.
- Force.
- Posture.

Repetitive movements are one of the leading risk factors for WMSD, especially when such movements involve the same joints and muscle groups. There are no standardized rules to judge the degree of repetitiveness of a task.

Keyboarding/data entry and mouse operation are examples of repetitive movements in office work.

Movements are forceful when substantial physical effort is required to perform a task. The amount of force we use depends on many factors, such as the weight of the objects to be lifted and their placement in relation to the body. We have to use more force to lift and carry a box if our arms are outstretched and the object is held away from the body.

Fixed or Awkward body positions can cause discomfort and fatigue if they are maintained for long periods of time. Everyone is familiar with the discomfort associated with sitting rigidly for too many hours.

How WMSD Affects the Body

WMSD can be grouped in four sections:

- Joint injury.
- Muscle injury.
- Tendon injury.
- Nerve injury.

A joint is the connecting point for two or more bones. The elbow, shoulder and spine are examples of joints. At the joint, the opposing surfaces of the bones are lined with flexible tissue called cartilage, made up of fibrous tissues and soft tissues. Cartilage provides a smooth surface for movements. As a result of repetitive forceful movements of joints, the cartilage softens and some of its fibres separate. The normally smooth cartilage becomes pitted and frayed, and whole segments of cartilage may be lost. Bony outgrowths form, which interfere with the movement of joints. These changes interfere with the joint movement and can cause severe pain. These changes also mark degenerative joint disease or osteoarthritis.

Muscles provide the force to perform a task. For every movement, the muscles squeeze together, or contract, and then relax. When we do prolonged work in a sitting position, our muscles are contracted for too long. When we use a keyboard or mouse our muscles are contracted with little chance to relax. This causes reduced flow of blood to the muscles. As a result, the chemical by-products (waste substances produced by the muscles) are not removed fast enough, and they build up. The accumulation of these substances causes muscle irritation, injury and pain.

Tendons are fibre bundles that attach muscles to bones. Tendons are elastic and flexible; they assist in concentrating the pull of the muscle on a small area of the bone. Some tendons are surrounded by tendon sheaths which are tubular double layered sacs containing synovial (lubricating) fluid. Tendon injuries occur as a result of repetitive or frequent work activities and awkward postures. These injuries affect mainly the hand and wrist but can also affect the shoulder, elbow and forearm.

Types of injuries are tendonitis, tenosynovitis, ganglion cyst and bursitis.

Nerves carry signals from the brain to control muscle activity. They also carry information about temperature, pain and touch from the body to the brain and control bodily functions such as sweating and salivation.

Muscles, tendons, ligaments and blood vessels surround nerves. With repetitive motions and awkward postures, the tissues surrounding nerves become swollen, and squeeze or compress nerves.

Two types of WMSD that affect the nerves are Herniated Discs in the cervical or lumbar spine and Carpal Tunnel Syndrome. Note that not all herniated discs in the neck and lower back affect the nerves.

Common Symptoms of WMSD

WMSD generally affect the back, shoulders, hands, wrists, and arms. The following are some warning signs:

- Pain: burning or aching.
- Fatigue.
- Tingling, numbness.
- Loss of grip, clumsiness.
- Stiffness: difficulty when closing or opening doorknobs.
- Reduced control or coordination of body movements.
- Hypersensitivity: tenderness to the touch.

Different types of WMSD are known by many different names depending on the type of injury and affected body part. The following table summarizes symptoms of some common injury types.

Type of Disorder	*Symptoms*
Back disorder	Pain in the back; difficulty in turning, bending and moving the back.
Carpal tunnel syndrome (CTS)	Pain and numbness in the index and middle fingers and weakness of the abductor muscles in the thumb.
Tendonitis	Pain mainly in the hands and wrist due to inflammation of the tendon as a result of overuse.
Tenosynovitis	Inflammation of the tendon sheath, producing pain and swelling.
Herniated Discs in the cervical or lumbar spine	Pain, weakness and numbness in the arms and fingers, or legs and feet as a result of the squeezing of the nerves and blood vessels in the neck or lower back.
Bursitis	Restriction and pain in joint movement as a result of deficient lubrication at a bone joint, for example at the shoulder.

If a person notices symptoms of MSI or suspects that they might have a WMSD, they should see a physician immediately. It is not recommended to perform self-diagnosis and self-treatment of WMSD.

ERGONOMIC HAZARDS

Ergonomic hazards refer to workplace conditions that pose the risk of injury to the musculoskeletal system of the worker. The recognition of ergonomic hazards is important to their prevention. This involves identifying conditions and practices where improvements need to be made. The most important risk factors that contribute to ergonomic hazards (risk of WMSD) are:

- Workstation design.
- Working in a standing or sitting position for prolonged periods.
- Work organization.
- Tools, equipment and furniture design.
- Manual material handling.
- Work environment.
- Lighting and vision.

The most common ergonomic hazards are outlined in the following table:

Hazard type	*Causes*
Eye strain/headaches	• Reading materials too close or too far • Too much or too little illumination • Glare/flicker on screen • Improper location of reading materials • Uncorrected vision • Low humidity

Hazard type	*Causes*
Neck Pain	• Monitor or document holder too high or too low • Chair too high or too low • Monitor or document holder too far off the line of vision and/or not centered • Poor sitting posture • Slumping and slouching • Typing with winged-up shoulder
Shoulder pain	• Tense shoulders while typing • Operating the mouse located too far to the side • Holding the phone receiver between the head and shoulder
Elbow pain	• Desk is too high • Operating the mouse located too far to the side • Contact stress between elbows and work surface
Carpal tunnel syndrome (CTS)	• Excessive up and down wrist and finger movement • Typing with wrists bent upwards • Tense or tight grip on a mouse • Contact stress between wrists and keyboard tray
Back Pain	• Long periods of sitting in one position • Poor sitting position • Slumping and slouching • Chair is too high or too low • Improper manual material handling

WORKSTATION DESIGN

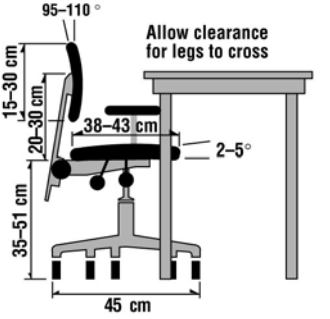
Workstations must be flexible enough to accommodate all individuals using them.

Workplace design includes:

- Work surface (desks).
- Seats (chairs).
- Accessories.
- Workstation layout.
- Working space.

The listings that follow will aid in identifying the requirement for adjustments or changes in the workplace or job design.

Chair



- Chair height is appropriate for the individual and the work surface height.
- Chair has five wheels or casters suitable for the floor surface.
- Chair swivels; backrest is adjustable for both height and angle.
- Backrest supports the inward curve of the lower back.
- Footrests are used if feet do not rest flat on the floor.
- Seat does not cause pressure on the back of the legs and feet are flat on the floor or a footrest.
- Seat width is slightly wider than the hips.
- Chair is adjustable from the sitting position.
- Chair upholstery is a breathable fabric.
- Armrests that are adjustable in height and width. The armrests should support the arms while the elbows are bent at 90 degrees and while the arms rest directly at the side of the torso. The shoulders should not be raised. The armrests should be long enough to support the forearms without interfering with the work surface.

Keyboard

- During keyboard use, the forearm and upper arm form an angle of 80°–100°, with the upper arm almost vertical.
- The wrist is relaxed and not bent. Wrist rests are available if there is contact stress between the wrists and the keyboard tray.
- If used primarily for text entry, keyboard is directly in front of operator.
- If used primarily for data entry, keyboard is directly in front of the keying hand.

Mouse

- Place the mouse at the same level and as close to the side of the keyboard as feasible.
- Keep enough room to work the mouse so that variation in arm position is possible.
- Use a pad designed for the computer mouse and make sure it stays clean.
- Hold the mouse loosely in your hand and relax your grip. A tight grip will not help to position the pointer any more accurately or quickly.

- A conventional mouse should support the whole hand and therefore, correspond to the hand's shape and size (tip of the third digit to base of the palm). This will help to eliminate pressure points to the wrist and/or lead to excessive hand gripping of the mouse as well as provide proper palm support.
- Keep your wrist straight. Your forearm, wrist and fingers should all be in a straight line.
- Do not squeeze the mouse or press buttons with excessive force.

Monitor

- First line of text on the screen rests slightly below the employee's eye level. When wearing bifocal or progressive glasses and viewing the screen through the bottom portion of the lenses, the monitor is adjusted so that the first line of text is 5 to 7.5 cm (2 to 3") lower than eye level.
- Viewing distance is between 40 and 74 cm (16 and 29"), about one arm's length from the employee.
- The monitor is centered to the user.
- Screen is free of glare or shadows.
- Letters on the screen are sharp, easy to read and do not flicker.

Work Surface

- Work surface height is adjustable.
- Legroom is sufficient to change positions of legs without getting up.
- Work surface is large enough to hold work materials.
- Frequently used items are close to and in front of the operator.
- Infrequently used items are stored separately.

Visual Environment

- Lighting does not produce glare or reflection on the screen.
- Lighting does not interfere with reading characters on the screen and source document.
- Wall color is neutral and not too bright.
- Shiny surfaces and objects are covered or removed.
- Windows have blinds or curtains to prevent glare.

- Visual display terminals are away from windows, or screens are at a 90° angle to windows.
- Ceiling fluorescent lights are oriented lengthwise to the sides of the visual display terminal.
- Room lighting is uniform and slightly dimmer than usual office lighting.
- General work areas have indirect or diffused lighting.
- Ceiling fluorescent lights are covered with diffusers or parabolic louvers.
- Adjustable task lights are available over source documents.

Telephone

- Place the telephone close to you on your right side if you are right handed and vice-versa if you are left handed. It reduces repetitive reaching.
- If you use your phone frequently, use a head set to reduce awkward neck postures.

Work Organization

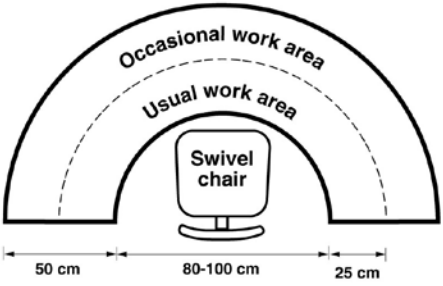
Work organization determines what jobs to do and how to do them. It gives the individual flexibility to vary their body positions and reduces the time spent doing the same repetitive or forceful movements. Important components of good work organization are:

- Work pace.
- Work breaks.
- Rest breaks.
- Adjustment periods.
- Training and education.


National Defence
Défense nationale
MOVE
SHIFT
STRETCH
BOUGEZ
CHANGEZ
ÉTIREZ
Change positions, your body will thank you.
Changez de positions, votre corps vous remerciera.

Workstation Layout

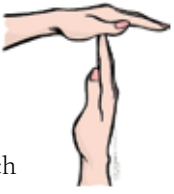
Improperly laid out work materials can create the risk factors for WMSD. A poor layout makes it hard to reach work objects without twisting, reaching or bending. One good way to arrange work materials is in a semi-circle shape like the one shown below.



Work Pace

Too fast a pace of work allows the body little recovery time between repetitive or forceful movements. This increases the risk of developing WMSD. A good pace should be determined by the joint efforts of management and workers.

Work Breaks



Work breaks are the times when we stop working on one task and start another, allowing us to use different parts of the body. Work breaks can help prevent WMSD by allowing us to rest, stretch or change body positions when we need to. For continuous Video Display Terminal (VDT) work, a break of 5 to 15 minutes per hour is generally recommended.

Rest Breaks

Rest breaks are the times we stop working. Besides getting a refreshment, we should use this time to stretch and change body positions.

Adjustment Periods

An adjustment period is the time we need to get "in shape" when we return to our job after a long absence, or when we start a new job. It should allow us to build up muscle strength before we work at full capacity. The length of an adjustment period depends on the type of job.

Education and Training

Ergonomics education should be a part of the overall health and safety education specific to the workplace. Training should emphasize safe work practices and methods of adjusting workstations to prevent WMSD. A typical session may include:

- An explanation of the DND internal ergonomic program.
- The ergonomic hazards that cause WMSD.
- How to deal with WMSD and back injuries.
- How to report a suspected WMSD case.
- How to minimize the risk of WMSD.
- Actions taken by management to reduce occurrences of WMSD.
- The ergonomic aspects of VDT operation.

MANUAL MATERIAL HANDLING

Many people in office environments need to move boxes and other heavy objects. Manual material handling involves lifting, lowering, pulling, pushing, carrying and holding materials. These activities pose risk of WMSD especially back injuries.

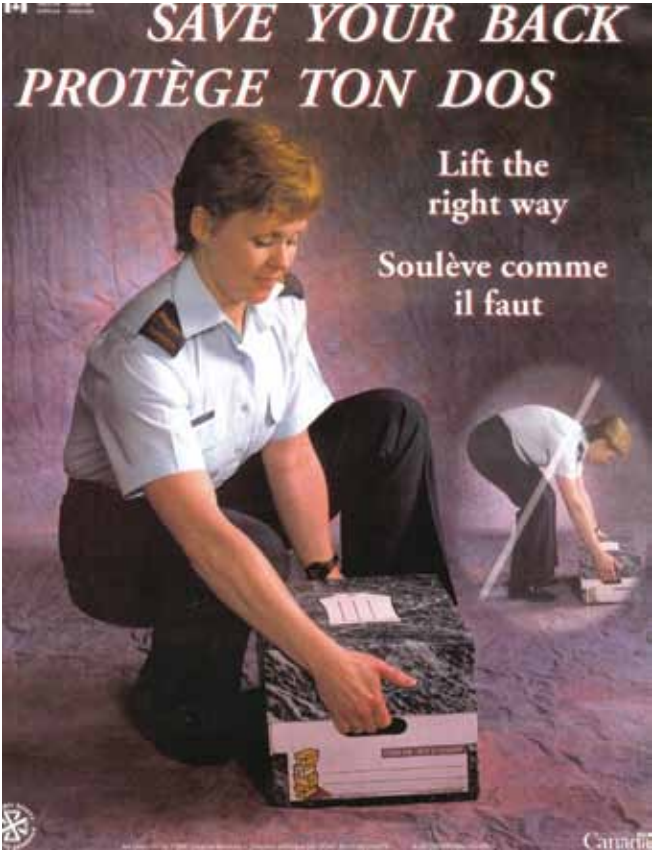
Guidelines for Manual Material Handling

✔ **REDUCE** the weight of the load:

- Reduce the size by repacking;
- Reduce the number of objects; or
- Seek help from co-workers to lift extra heavy loads.

- **MAKE** the load easier to handle:
  - Change the load's size and shape to move the centre of gravity nearer to the lifter;
  - Store the load at or above hip height but below shoulder height to avoid the need to bend, or reach above shoulders;
  - Use more than one person or a mechanical device to move the load;
  - Drag or roll the load with handling aids such as cars, rope or slings; or
  - Transfer the weight of the load to stronger parts of the body using handgrips, straps or belts.
- **USE** storage techniques to ease material handling:
  - Store loads at waist level;
  - Use wall brackets, shelving or pallet stands of appropriate height; or
  - Load pallets so that heavy articles are around the edges of the pallet and not in the centre.
- **REDUCE** the distance a load is carried:
  - Improve the layout of the work area; or
  - Relocate production or storage areas.
- **REDUCE** the number of lifts:
  - Assign more people to the task;
  - Use mechanical aids; or
  - Rearrange the storage or work area.
- **REDUCE** twisting of the body:
  - Keep all loads in front of the body;
  - Allow enough space for the whole body to turn;
  - Turn by moving the feet rather than twisting the body; and
  - Minimize bending to lift or shift a load.

- **DO NOT TWIST** while lifting, moving, pushing or pulling a load.
- **DO NOT BEND** to the side during manual handling.
- **DO NOT SHIFT** or raise a heavy load with outstretched arms.
- **DO NOT CARRY** loads a long distance.
- **DO NOT SWING** and throw heavy loads.



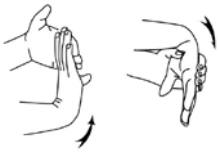
EXERCISES IN THE OFFICE

VDT work often involves repetitive movements of the hands and few changes to the body position. This can lead to muscle pain and strain. The following are a few exercises you can do at your desk:

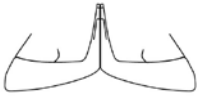
Hand and Forearm Exercises

1. Gently bend wrist from side to side as far as possible. Hold 3-5 seconds. Repeat 3 times.

2. Start with arm in hand-shaking position and slowly rotate palm down until you feel a stretch. Hold 3-5 seconds. Then rotate palm up until you feel a stretch. Repeat 3 times.

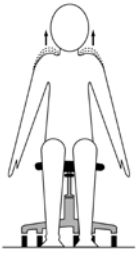


3. Grasp your hand and hold your fingers with the other hand. Slowly bend your wrist down until you feel a stretch. Hold for 3 to 5 seconds. Relax. Repeat 3 times. Then slowly bend your wrist up until you feel the stretch. Hold and relax as above.



4. Sitting with elbows on table and palms together, slowly lower wrists to table until you feel a stretch. Be sure to keep palms together throughout the stretch. Hold 5-7 seconds. Relax. Repeat 3 times.

Neck and Shoulder Exercises

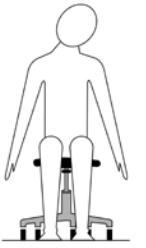


1. *Shoulder Shrug*: The purpose of the shoulder shrug is to relieve early symptoms of tightness or tension in the shoulder and neck
   - Raise the top of your shoulders towards your ears until you feel slight tension in your neck and shoulders. Hold this feeling of tension for 3 to 5 seconds.

Then relax your shoulders downward into their normal position. Do this 2 or 3 times.

2. *Head Glide*: The head glide helps to stretch your chest, neck and shoulder muscles.
   - Sit or stand upright. Without lifting your chin, glide your head straight back. You know you are doing this exercise right if it gives you the feeling of a double chin. Hold for 20 counts and repeat 5 to 10 times.

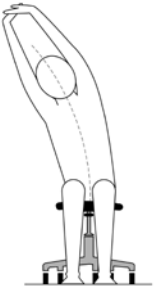
3. *Neck Relaxer*: This exercise helps to relax the neck.
   - Drop your head slowly to the left, trying to touch your left ear to your left shoulder. Repeat on the right side. Slowly drop you chin to your chest, turn your head all the way to the left, and then turn all the way to the right.



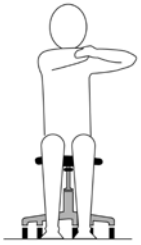
4. *Shoulder Roll*: This exercise will help relax the shoulder muscles.
   - Slowly roll your shoulders backward five times in a circular motion. Next, roll your shoulders forwards.

Back, Side and Leg Exercises

1. *Back/Side Stretch*:
   - Interlace your fingers and lift your arms over your head, keeping the elbows straight. Press arms as far back as you can. To stretch your sides, slowly lean to the left and then to the right.

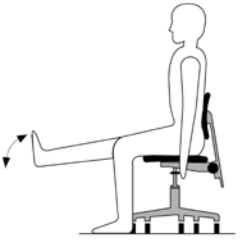


2. *Middle/Upper Back Stretch*:
   - Hold your right arm with your left hand just above the elbow. Gently push your elbow toward your left shoulder. Hold stretch for 5 seconds. Repeat with your le arm.



3. *Back Curl* (will also stretch your legs):
   - Grasp your shin. Lift the leg off the floor. Bend forward (curling your back), and reach your nose to your knee. Repeat with the other leg.

4. *Ankle Flex and Stretch*:
   - Hold one foot off the floor with your leg straight. Alternately flex your ankle (point your toes up) and extend (point your toes down). Repeat with the other leg.



5. *Leg Lift*:
   - Sit forward on the chair so that your back is not touching the chair's back. Place feet flat on the floor. With a straight leg, lift one foot a few inches off the floor. Hold momentarily, and return your foot to the floor. Repeat with the other leg.

CONCLUSION

All of you that work in an office environment are subject to the injuries, pain and discomfort described in this Guide. We hope that you have taken the time to read through it and, if appropriate, applied some of the suggestions to your own workstation.

Safety, and the prevention of hazardous occurrences, even those that might not seem obvious at first glance, begins with each and every one of you. Your personal attention to improved ergonomics in your workstation will not only contribute to your own well-being, but will also add to the overall effectiveness and efficiency of your organization and to the DND/CF as a whole.

ANNEX A

ADJUSTING AND ADAPTING YOUR COMPUTER WORKSTATION

CHECKLIST

A COMFORTABLE POSTURE...

EVERYTHING WITHIN REACH...

- Place the mouse next to the keyboard and at the same height. *(See over, Note 7)*
- Document(s) should be on a document-holder that is placed either between the keyboard and the screen or next to and at approximately the same height as the monitor screen.
- A task light improves lighting on the document(s) you are reading. *(See over, Note 8)*

A properly adjusted workstation allows you to adopt a natural and comfortable posture. To benefit from these adjustments, your work should be properly organized. (See over, Note 9)

1 YOUR THIGHS SHOULD BE PARALLEL TO THE FLOOR
- Adjust the height and/or angle of the chair seat.

2 YOUR FEET SHOULD LAY FLAT ON THE FLOOR OR ON A FOOTREST
- Adjust the height of the chair seat. *(See over, Note 1)*

3 BACK OF THE KNEES SHOULD BE CLEAR OF THE FRONT EDGE OF THE SEAT
- Adjust the depth of the chair seat so that you can easily place your fist behind your knee.
- Be sure to specify the appropriate seat depth length when ordering a new chair.

4 YOUR BACK: LOWER AND MID-BACK SHOULD BE WELL SUPPORTED
- Adjust the height, tension, and angle of the backrest, to ensure the lumbar support is positioned at your waist.

5 YOUR FOREARMS SHOULD BE SUPPORTED AND YOUR SHOULDERS RELAXED AT ALL TIMES
- The height of and distance between your armrests should allow freedom of movement for your forearms when performing tasks, yet provide support for them during rest periods or when using your mouse.
- Avoid hunching your shoulders and ensure that the elbows/upper arms remain close to your torso. *(If armrests do not adjust, see over, Note 2)*

6 YOUR ELBOWS SHOULD BE AT APPROXIMATELY THE SAME HEIGHT AS THE KEYBOARD
- Adjust the height of your keyboard tray or work surface so the keyboard is at the height of your elbows.
(If this is not possible, see over, Notes 3 and 4)

7 YOUR WRISTS SHOULD BE STRAIGHT AT ALL TIMES AND YOUR HANDS IN LINE WITH YOUR FOREARMS
- Adjust the angle and height of the keyboard tray or work surface to ensure straight wrists.
- If your keyboard tray or work surface is not adjustable, adjust your seat to ensure straight wrists. You will need to use a footrest if you have raised the seat and your feet are not flat and well supported on the floor.
(See over, Notes 4 and 5)

8 THE MONITOR SHOULD BE AT A COMFORTABLE READING DISTANCE AND HEIGHT
- The viewing distance should be within 16" to 29" (40cm-74cm). About one arm's length.
- The monitor height should allow the neck to be in a neutral position when looking at the top row of text on the screen.
(See over, Note 6)

MORE INFORMATION

ADJUSTING AND ADAPTING YOUR COMPUTER WORKSTATION

NOTE 1
ADJUSTING THE HEIGHT OF YOUR CHAIR SEAT
- Adjust the height of your chair seat so that it is below or at knee height.

NOTE 2
ARMRESTS
- Your forearms can be supported by armrests. If your armrests are not adjustable, replace with adjustable armrests if possible.

NOTE 3
WORK SURFACE
- If your work surface is not adjustable, adjust the height of your chair seat so that your elbows are at the same height as the keyboard.
- The height of the chair should be adjusted considering the height of the work surface and the work being done.

NOTE 4
FOOTREST
- A footrest may be necessary when the chair is raised for a worker to reach a work surface and when feet are unsupported.
- If a worker moves his or her chair frequently between different work surfaces, more than one footrest may be required.

NOTE 5
HAND POSITION
- The purpose of a hand/wrist support is to prevent your wrists from resting on hard surfaces during rest periods between keyboard tasks.
- Good habits include avoiding extreme wrist postures, such as those illustrated below.

NOTE 6
POSITION OF COMPUTER MONITOR
- If you wear bifocals and view the screen with the lower portion of the lenses, it may help to position the monitor lower or tilt it back slightly. Watch out for glare!

NOTE 7
SIZE AND POSITION OF THE MOUSE
- Your mouse should be the proper size to fit your hand and be positioned directly beside your keyboard.
- If you have a keyboard tray that is not wide enough to accommodate the mouse, consider the use of adjustable shelves that may be attached to the work surface or those that may extend the keyboard tray.

- Another option is to eliminate your keyboard tray by placing your keyboard and mouse on the work surface. Note that if you choose this option, remember to apply the necessary adjustments to the chair and monitor height as required.
- Ensure your arms are close to your body while using the mouse.

NOTE 8
LIGHTING AND GLARE
To avoid glare and increase monitor screen visibility, you can:
- Reduce, eliminate or diffuse any overhead lighting that is reflected on your screen;
- Position your monitor so that your line of vision is parallel to the window;
- Ensure that the monitor screen has a light background colour and dark characters;
- An antiglare screen should be avoided unless other measures are not applicable.

Please note: glare control measures should ensure that a comfortable posture can be maintained.

NOTE 9
WORK ORGANIZATION
Even the most comfortable posture should be changed periodically:
- Tilt your chair seat and backrest to vary posture;
- Take short breaks frequently to avoid prolonged static postures;
- Alternate work at the computer with non-computer tasks;
- Adopt a work pace that is regular and reasonable for you;
- Periodically look away from the screen to a farther distance;
- Stretch regularly and perform relaxation exercises;
- Swivel your chair to face your next task instead of twisting your body.

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