General Guidance on Ergonomics

Policy and Guidance
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Introduction

Many staff within MRC units work in a static, sitting position for prolonged periods. Examples of this type of work include, microscopy, the use of microbiological safety cabinets, pipetting, and the use of display screen equipment. As these staff may spend the majority of their working day at their workstations it is important that they are comfortable, adopt good posture and good working practices to ensure that the possibility of developing a musculo-skeletal upper-limb disorder is minimised especially if repetitive tasks are being performed.
Basic workstation ergonomics

A workstation in this context is defined as a person’s immediate work surroundings. This may be at a desk, laboratory bench, an instrument or machine. When examining work conditions for ergonomic improvement it is generally most effective to treat each case individually. Work places and workstations are designed to fit the ‘average’ worker with an ‘average’ degree of comfort. It is not surprising then to find that even quite minor changes in workstations, equipment or tasks can provide significant improvements in worker comfort, health, safety and productivity. If the workstation is not properly designed and the worker cannot maintain a correct and comfortable body posture they may suffer from back and upper-limb problems, circulatory problems in the legs, headaches and cramps.

A workstation should allow the worker to sit in a balanced body position. A balanced position ensures that the worker is allowed to move the spine freely and that the spine alignment is the same whether the worker sits or stands.

The following are some basic ergonomic principles for workstation design. A general rule of thumb is to consider body size information, such as height, when choosing and adjusting workstations. Above all, workstations must be adjusted so that the worker is comfortable.

**Head height**

- Allow adequate space for the tallest possible worker.
- Position displays at or below eye level because people naturally look slightly downward.

**Shoulder height**

- Control panels should be placed between shoulder and waist height
- Avoid placing above shoulder height objects or controls that are used often.

**Arm reach**

- Place items within the shortest arm reach to avoid over-stretching while reaching up or outward.
- Position items needed for work so that the tallest worker does not need to bend while reach down.
- Keep frequently used materials and tools close to and in front of the body.

**Elbow height**

- Adjust work surface height so that it is at or below elbow height for most job tasks.

**Hand height**

- Make sure that items that have to be lifted are kept between hand and shoulder height.
Leg length
♦ Adjust chair height according to leg length and the height of the work surface.
♦ Allow space so that legs can be outstretched, with enough space for long legs.
♦ Provide an adjustable footrest so that legs are not dangling and to help the worker change body position.

Hands
♦ Hand grips should fit the hands. Small hand grips are needed for small hands, larger grips for bigger hands. This is particularly important when handling micropipettes.
♦ Allow enough work space for the largest hands.
♦ Keep your shoulders relaxed and your elbows close to your sides when working. Avoid reaching out to use instruments and work materials.
♦ Maintain neutral or aligned wrist and arm postures when working. Sit close to your work area, keep objects close, and adjust your chair to match the height of the bench.
♦ Avoid repetitive or forceful twisting and turning motions (i.e. opening valves or adjusting microscopes). Make sure valves and knobs are clean and in good working order.
♦ Work with your wrist in a neutral or straight position as if you were shaking hands with someone.
♦ Use light pressure when performing tasks such as pipetting.
♦ Use electronic pipettes or light touch models whenever possible.
♦ Select equipment and tools that are the right size for your hand.
♦ Use padding and tubing to reduce pressure and force when working. For example, use rubber tubing on forceps to increase diameter and reduce pinch force. Soften sharp edges on work surfaces with padding.
♦ Use thin, flexible gloves that fit properly. Ill fitting and poorly designed gloves increase pinch and grip forces when working.

Body size
♦ Allow enough space at the workstation for the largest worker.

Avoid Static Positions
♦ Weight should be shifted often when standing to work. A stool or shelf should be used to prop up a foot to relieve pressure on your back.
♦ If standing in one spot for long periods is required, use cushioned floor mats or shoes with good support.
♦ Alternate how objects like forceps are held. Switch holding with the thumb and index finger, and the index and middle fingers to vary the task.
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♦ Vary activities. Changes in position and taking breaks every 20 minutes to rest muscles to rest and increase blood flow and circulation should be encouraged.

Here are some general suggestions for an ergonomic workstation

Accommodate both right- and left-handed workers by providing a good work layout and tools which suit their needs.

♦ Provide each workstation with a chair even if the work is done standing up. Periodic rests and changes in body position reduce problems of standing for too long.

♦ Eliminate glare and shadows. Good lighting is essential.

When you think about how to improve a workstation, remember this rule:

If it feels right, it probably is right. If it feels uncomfortable, there is probably something wrong with the design, not the worker.

Why is body position or posture important while sitting?

Poor arrangement of the workstation encourages an awkward body position. A poor body position or posture can hinder breathing and blood circulation and contribute to injuries affecting people’s ability to move.

What to avoid while sitting?

• Sitting on a chair that is too high.
• Tilting the head forward. This helps prevent neck injury.
• Sitting without lumbar support. This helps prevent back pain.
• Working with arms raised. This helps prevent neck and shoulder pain.
• Bending wrists. This helps prevent muscle cramps.
• Working with unsupported forearms. This helps prevent shoulder and back pain.
• Cramming thighs under a worktable. This reduces blood circulation.
• Working with legs dangling. This destabilizes the body causing tiredness.
• Pressure on the underside of thighs. This reduces back flow of blood and can cause swelling in the legs.
• Sitting on a chair that has poor support. It can overturn and cause injuries.

What to look for in laboratory/office seating

• Check that the adjustability range that can accommodate the workers’ body sizes.
• Select a chair that allows the worker to adjust the height and depth of the seat as well as the height and tilt of the backrest. An adjustable seat tilt is also desirable.
• Select a chair with:
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- a backrest that is shaped to support the lower back and does not give way
- a seat height that does not compress the underside of the thighs
- a front edge curved downwards
- stable base (5 legs).
- arm rests where practical

- Use a footrest when feet cannot rest on the floor
- Ensure that the chair has a wheel locking mechanism.
- Use a swivel chair with an adjustable seat height.

Adjust the chair seat height between 25 to 35 inches.