Workplace Ergonomics
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Workplace Ergonomics

Aim

To provide the user with the knowledge and skills to:

• Ergonomically setup their workstation

• Perform correct pause stretch exercises
Workplace Ergonomics

Ergonomics

ERGO + NOMICS = ERGONOMICS

“work” + “rules or laws” = “the laws of work”

• Scientific discipline that studies the interaction between humans and the environment i.e. the person and their workstation

• Designing the job to match the worker rather than matching the worker to the job

• Ergonomics covers all aspects of a job, from the physical stresses it places on joints, muscles, nerves, tendons, bones and the like, to environmental factors which can effect hearing, vision, and general comfort and health.
Injuries due to Poor Ergonomics
What is occupational overuse?

- Conditions characterised by discomfort or persistent pain in muscles, tendons and other soft tissues.
Common problem areas

Back, neck, upper limb… caused by:

- Repetition and over strain at tendons and joints
- Unbalanced and prolonged postures
- chronic: cyclic inflammation and weakness
Common problem areas

The Spine is divided into 5 parts:

- Cervical Vertebrae – C1-C7
- Thoracic Vertebrae – T1-T12
- Lumbar Vertebrae – L1 – L5
- Sacral Vertebrae (fused) – S1 – S5
- Coccyx

Normal Spine: S shaped curve

- Each vertebrae is separated by an intervertebral disc
Vertebrae

- The spine comprises of a total of 30 vertebrae.

Vertebrae – 2 parts

- A squat cylindrical portion of bone at the front – acts as the main load bearing column
- 3 bony processes at the rear which provide an attachment point for muscles, ligaments and ribs
- Each vertebra is joined to its neighbour through two interlocking pegs known as the Facet Joint
Intervertebral Discs

- Act as Shock Absorbers

- Each disc made up of two parts:
  - Annulus: Outer part of the disc made of a fibrous ligaments. Extremely strong and responsible for connecting each vertebrae to one another. Acts as a coiled spring
  - Nucleus Pulposus – a soft jelly like centre. Acts as a ball bearing that the vertebrae roll over during flexion, extension and lateral bending.
• When you lean forward, the front of the vertebrae come closer together forcing the disc fluid backwards.

• When you lean backwards, the back of the vertebrae come closer together forcing the disc fluid forwards.

• When you lean to the right, the disc fluid moves to the left. When you lean to the left, the disc fluid moves to the right.

• This is normal!!
Owing to our postures during the day, we tend to mainly move into a forward (flexed) position for example: sitting at a computer, removing items from boxes, driving the car, cleaning the house, putting on shoes, or relaxing in a sofa. Therefore the disc fluid is gradually pushed backwards over time. It eventually places increased pressure on the back wall of the disc (toothpaste tube).
When the disc fluid starts to place more pressure on the rear wall of the disc, you may start feeling low back pain. The more the disc fluid moves backwards, the more pressure is placed on the disc wall which results in the pain being referred further down the buttocks or down the thigh. The disc wall may bulge and irritate the nerve causing pain, numbness or weakness down the leg.
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Adjusting the workstation
Step 1 Start with the chair…

What makes an ergonomic chair

• 5 star base of support
• Height adjustable base
• No armrests present
Height of chair

- Chair needs to be at a height so that your forearms are parallel to the desk with your shoulders relaxed and elbows at 90 degrees.
- If your feet can’t reach the floor comfortably, you require a footrest.
- Backrest at 90° to 100° to the floor.
Step 2 The Visual Display Unit (VDU)

• The VDU should be approximately one arms length away from the user.

• This is the average focal distance for a person and reduces the need to slouch forward to read the screen.
• The top of the VDU should be at eye-level.

• People with bi-focals may need to have their VDU lower to avoid excessive neck extension.
Step 3 The Keyboard

- The keyboard should be positioned approximately 8cm from the edge of the desk.

- The keyboard should be located directly in front of the user.
• The keyboard should not be inclined to avoid excessive and prolonged extension of the wrist whilst typing.
Step 4 The Mouse

• The mouse should be positioned to allow the elbow by the side of the user’s body and the wrist remains in a neutral position.

• Positioning the mouse too far backwards and to the right (right hand dominant people) places the wrist in an unnatural angle which can predispose the user to carpal tunnel and tennis elbow type symptoms.
The Mouse and Keyboard

- The angle of the elbows should be 90 degrees relative to the upper arms.
- The elbows should be close to the side of the body and the wrists not to the side when typing / working.
Step 5 The zone of frequent use

- Items used repetitively during the day (for example pens, stapler, punch or telephone) need to be close enough so that the user does not have to stretch for the item.

- This reduces the risk of slouching once the item has been grasped.
Task & equipment layout

Keying priority

Non-mouse priority

Mouse priority

Phone and writing priority
Laptops

• Always adjust the laptop for the screen height.

• Preferentially use a laptop stand or docking station.

• Use an external mouse and keyboard.
Manual Handling
Plan the Lift

• Can manual handling aids be used?

• Where is the load to be placed?

• Will two people be required to perform the lift?

• Clear the work area of hazards, obstructions etc
Plan the Lift

- Use the large muscles of your legs to lift, let the quadriceps and hamstrings do the work.

- Hold the item close to your body and as close to your centre of gravity as possible

- Don’t twist with your back, move with your feet. Keep your hips and shoulders in alignment.

- Pull or push if able, rather that lift.

- Don’t jerk the load. Lift smoothly.
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Accessing Files and Deskside Cabinets

• Do NOT sit in your chair, lean to the side and reach for a file.

• Stand up, bend down with your hips and knees in front of the cabinet and access the file.

• Do NOT bend your back
Pause Stretch Exercises

• These exercises help reduce the pressure on the intervertebral discs, muscles, joints and ligaments of the spine.

• They should be performed regularly (every 1-2 hours) during the day.
Chin Retraction

- Pull your entire head backwards on your neck
- Your chin should not go down or up but directly backward
- Hold 2 seconds then relax
- Do not poke the chin forwards
- Repeat 10 times approximately every hour
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Back Bend

- In standing, place your hands on your buttocks
- Lean backwards trying to bend your back just above your buttocks
- Hold 2 seconds then straighten up
- Repeat 10 times approximately every hour
Reach for the Ceiling

- Clasp your hands together and turn them inside-out
- Reach to the ceiling
- Hold 10 seconds
- Pull hands backwards or sideways and hold a further 10 seconds each movement
Forearm Stretch

- Hold your arm straight out in front of you
- Pull your hand upwards
- Hold 20 seconds
- Pull your hand downwards
- Hold 20 seconds
Shoulder Rolls

- Rotate your shoulders backwards approximately 20 times
- Emphasise a good posture while doing the stretch
- Don’t roll your shoulders forward as this emphasises poor posture
Thoracic Extensions

- (To be performed in a chair with a 30-50cm backrest)
- Support your head in your hands.
- Slowly and gently lean backwards in your chair.
- Hold 2 seconds.
- Slide approximately 3cm down the chair. Slowly and gently lean backwards again.
- Repeat along your thoracic spine to just below your neck.