Office Ergonomics for Carpal Tunnel Syndrome

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Ergonomics

- Changing the environment
- Changing the worker
- Minimizing risk factors

Risk Factors for Office Work

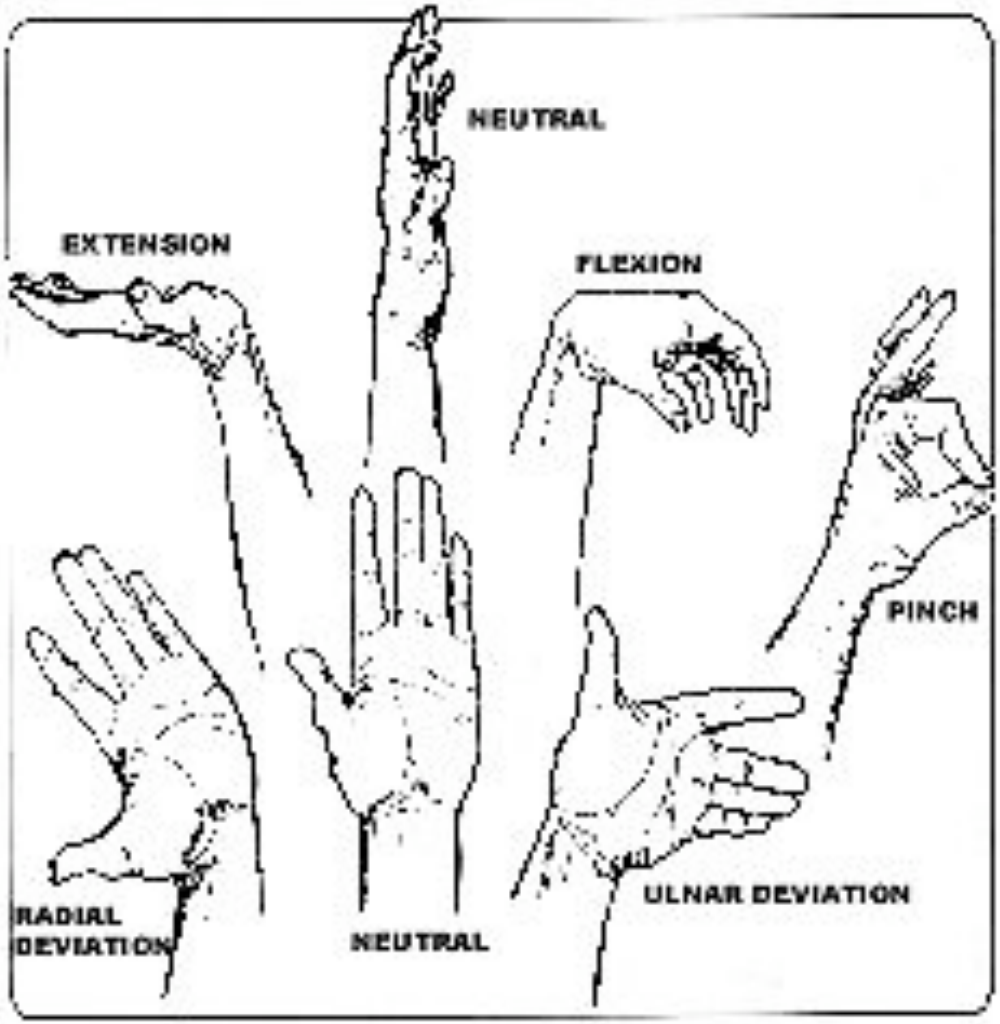
- Force
- Posture
- Repetition
- Duration

Cumulative Loading

- Carpal tunnel syndrome (CTS) is usually the result of a combination of risk factors
- The goal is to minimize the risk factors.

Basic Ergonomic Principles

- Maintain neutral wrist posture
- Minimize pressure in the carpal tunnel
  - Certain wrist movements elevate pressure in the carpal tunnel
  - Pinching/gripping with the wrist out of neutral elevates pressure
- Research focuses on improving ways to maintain neutral posture and reduce prevalence of CTS


NEUTRAL
EXTENSION
FLEXION
PINCH
RADIAL DEVIATION
NEUTRAL
ULNAR DEVIATION

Common Office Tasks

- Keyboard and mouse
  - Assumed to be primary contributors to CTS
  - Longitudinal studies do not support an ‘overwhelming’ link
  - Wrist extension >30 degrees = risk
- Phone
- Writing
- Filing - usually requires pinching
- Using office equipment (eg. staplers)

Work station setup

Desk

- Avoid putting keyboard tray in the corner of an L-shaped desk
  - Promotes wrist extension
- Place monitor/keyboard such that you are facing square to the work.
- Corners of the desk should be rounded.
- Preferably desk should be adjustable

Keyboard position

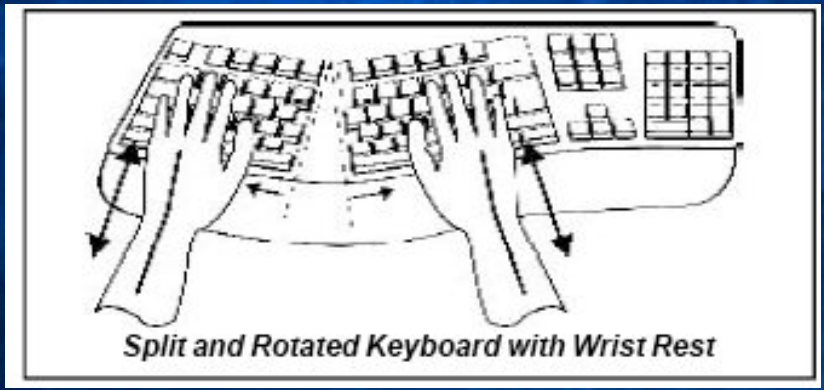
- Keyboard height should be at *approximately* elbow height.
- Distance between keyboard and desk edge should provide enough space to allow support of the forearms.
- Keyboard trays are not always required
  - Ideally keyboard should rest on an adjustable desk, otherwise use a keyboard tray

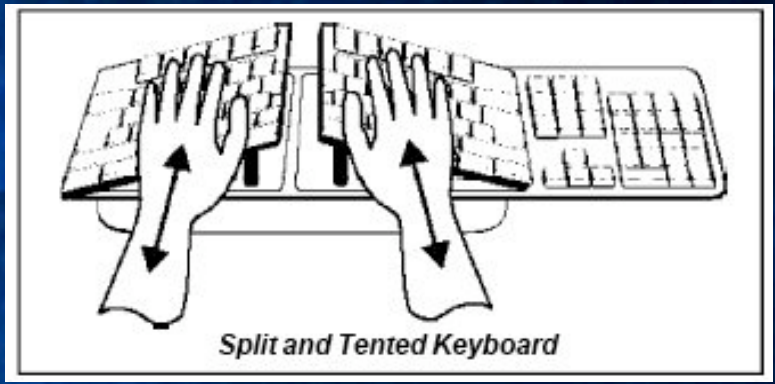
Wrist rest

- Not always required
  - Depends on the individual
- May actually increase CT pressure
- Research suggests forearm support with wrist rest instead of for the wrists
  - Highly individual
- Should not be too bulky or hard

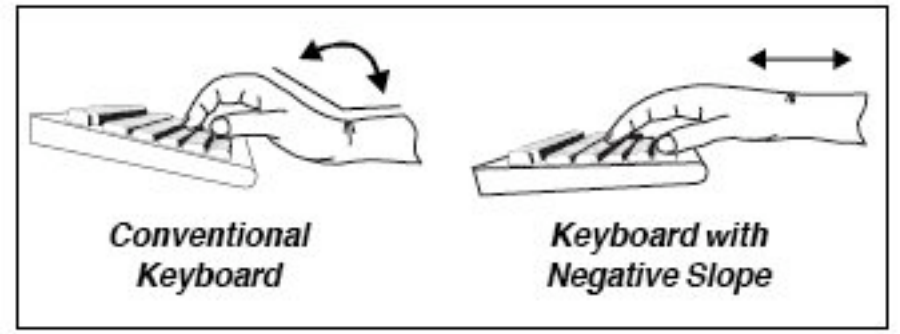
Mouse position

- Same height as keyboard
- Directly beside the the keyboard, not on the desk
- Directly in front (ex. touchpad) not considered a risk factor
- Purchase mouse tray if not enough room on keyboard tray
- Consider forearm support





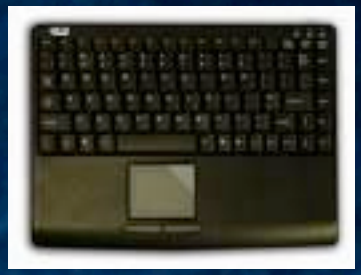
Ergonomic Trends - Keyboards



Increasing popularity

Keyboard conclusions

- Alternative keyboards have been shown to promote neutral posture.
  - Each type has advantages and disadvantages
- Current research does not provide conclusive evidence alternative keyboards reduce the risk of discomfort or injury.



Ergonomic Trends - Input devices (mouse)

Input Devices

- Mousing can be used up to 2/3 of the time.
- No evidence to support one type of mouse promotes a more neutral posture or reduces pressure.
- Research suggests ‘clicking and dragging’ the mouse elevates pressure

Input Devices - Conclusions

- One device is not necessarily better
- Emphasis should be placed on how device is used rather than the exact shape
  - Tendency to deviate wrist with certain devices
- Mouse should not be too large
- Avoid click and drag - change options
- Use optical mouse
- Alternate input devices
  - Talk to office supplier

Office Equipment

- Automation
  - Staplers, hole punch, etc
- Headset phones
- Use wireless mouse or keyboard
- Remove old equipment
  - Don’t give it to the new guy

What can the worker do

- Exercises - tendon gliding
- Rest work cycle - short breaks every 45-60 min
- Rotate jobs - filing, typing, etc.
- Remember: there is no ‘perfect’ posture and changing positions is appropriate
- Discuss ergonomics program/assessment with employer