

## Hand tool ergonomics

---

Powered and non-powered hand tools are widespread in the construction industry. Along with common injuries such as cuts and bruises, a large number of strains and sprains or soft tissue injuries are also related to frequent and prolonged use of hand tools. Prevention of soft tissue injuries is a priority for WorkSafeBC. The proper selection and design of hand tools is important to reduce the number of strains and sprains or soft tissue injuries.

### Factors affecting tool use

Several factors can affect your health and performance when using tools:

- Duration of tool use – static effort or load occurs when muscles are kept tense and motionless for prolonged periods of time.
  - Awkward working positions – occasionally, there may be jobs that are difficult to access or where there is limited space.
  - Weight of the tool – heavier tools demand more effort to operate. With a corresponding increased demand for more cordless tools, larger and heavier batteries are required.
  - Vibration – certain tools such as chipping hammers, grinders, and certain percussive tools can produce significant levels of vibration.
  - Shock reaction – sudden changes in torque from a tool can occur when, for example, the drill bit penetrates the work piece.
- Repetition – if the same muscles are used repeatedly or for long periods of time to operate a tool, your chance of soreness or injury increases.

### Reducing risk of injury

Keep the following suggestions in mind when selecting and using tools:

- Fits the job you are doing – selecting the right tool is very important.
- Fits the space available – pick a tool that fits your workspace.
- Reduces the force you need to apply – for jobs needing higher torques, consider ratchet tools to minimize the torque on your wrist.
- Fits your hand – select tools that you can comfortably grasp.
- Has comfortable handles – a good handle protects your hand from contact with the tool surface.
- Is not too heavy – as a general rule, tools heavier than 2.5 kg should be suspended.
- Is properly maintained – blunt or dull tools such as saws, cutters, screwdriver tips, or any tool in a poor state of repair can compromise your safety and increase the effort needed to operate them.