



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* – 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

- *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.