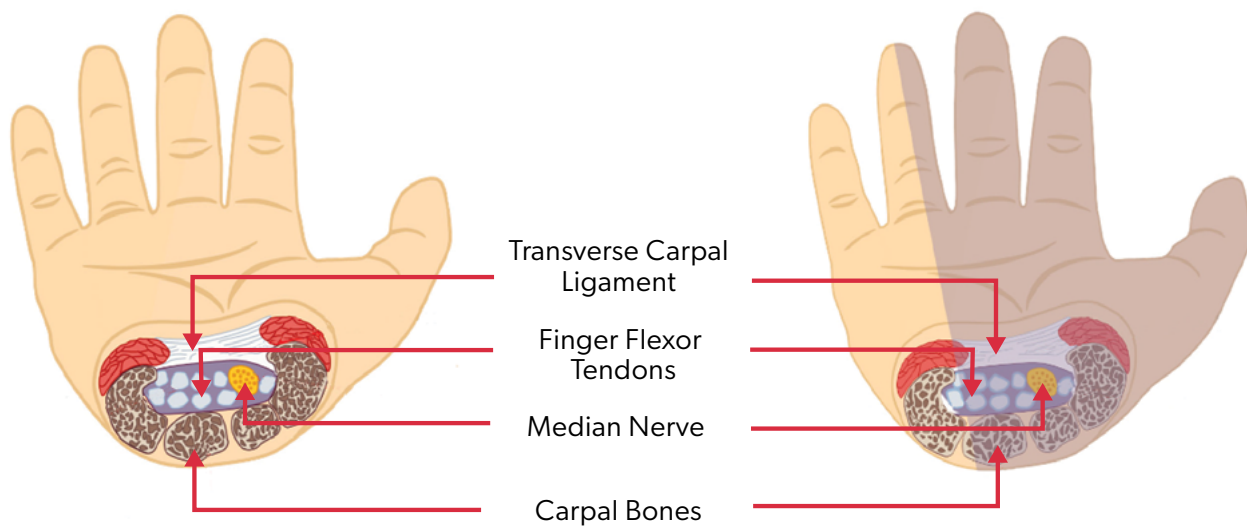
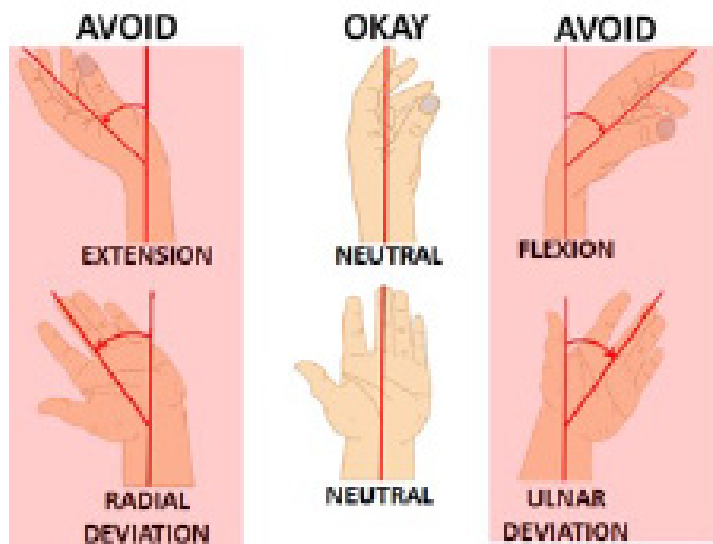


## What is Carpal Tunnel Syndrome?

The carpal tunnel is a narrow passageway formed by the carpal (wrist) bones and ligaments. The carpal tunnel contains the median nerve and flexor tendons that bend the fingers and thumb. Carpal tunnel syndrome (CTS) is a disorder characterized by tingling and pain in the hand and fingers due to compression of the median nerve in the wrist.



**FIGURE 1:** (Left) Structures within the Carpal Tunnel.  
(Right) Dark showing potentially effected area due to CTS.



**FIGURE 2:** Examples of awkward wrist postures.

(CONTINUED...)

### Ergonomic Risk Factors



#### FORCE

- Forceful exertions (e.g. lifting, carrying, gripping, etc.)
- Contact stress
- Mechanical stress
- Glove use
- Grip type



#### POSTURE

- Awkward postures (e.g. flexion, extension, radial, and ulnar deviations of the wrist)
- Static postures



#### INADEQUATE RECOVERY TIME

- Similar muscle actions performed multiple times in a short period
- Sustained muscle contractions without enough rest
- May lead to fatigue, weakness or altered movement patterns



#### VIBRATION

- Extended vibration exposure is linked to an increased swelling of the tendon sheaths
- Hand arm vibration
- Whole body vibration



#### TEMPERATURE

- Cold temperatures have been linked to the development of CTS by affecting nerve conduction, blood circulation, manual dexterity, and grip strength.



#### COMBINATION EFFECT

- Many or all of the risk factors act in synergy to increase the risk of CTS

### Specific Recommendations for Prevention

- Avoid contact stress where possible (e.g. resting wrists on hard surfaces)
- Decrease external forces
- Take regular breaks
- Maintain neutral hand/wrist postures
- Avoid prolonged exposure to vibration
- Minimize forceful grasps (e.g. pinch grips)
- [Monitor use of gloves that may affect force required](#)
- [Evaluate handle design options](#)

### Additional Resources and Tools

[OHCOW Ergo Info Sheet: MSDs](#)

[OHCOW Glove Size Calculator Tool](#)

[Carpal Tunnel Syndrome: Prevention Through Intervention PDF](#)

[MSD Prevention Guideline for Ontario](#)

[World Health Organization - Musculoskeletal Health](#)