# Ergo Info

Occupational Health Clinics for Ontario Workers

**Ligament Sprain/Tear**

## What is a Ligament Sprain or Tear?

Ligaments are strong, thick bundles of fibrous tissue that connect bone to bone providing stability to joints. They often occur in opposition across a joint, allowing for movement in different directions and stabilization — no movement — of the joint.

When a joint is destabilized in an extreme position, the ligament is stretched beyond its normal capacity, usually resulting in a tear of the ligamentous fibers, known as a sprain. Sprains vary in severity from mild to severe. Mild sprains are where only a few ligament fibers are overstretched or torn (Grade 1). Severe sprains are where the entire ligament tears into two separate pieces (Grade 3).

A ligament sprain or tear usually occurs via sudden trauma but may also occur due to overuse (repetitive stress placed on tissues with inadequate recovery).

The joints most susceptible to sprains are the ankle, wrist, elbow, and knee.


**FIGURE 1:** Example of Ligament Sprain/Tear

## Ergonomic Risk Factors Contributing to Ligament Sprain/Tear

| FORCE | POSTURE | INADEQUATE RECOVERY TIME | TEMPERATURE | COMBINATION EFFECT |
|---|---|---|---|---|
| • External mechanical force – force placed upon the body leading to joint destabilization (e.g., bodyweight or outside objects) | • Awkward postures (e.g., unbalanced loading, extending joints beyond an individual's normal range of motion, etc.) | • Similar muscle actions performed multiple times in a short period<br>• Sustained muscle contractions without enough rest | • Cold environment decreases muscle and joint flexibility | • Many or all of the risk factors act in synergy to increase the risk of developing ligament sprains/tears |

## Specific Recommendations for Prevention

- Avoid/minimize forceful exertion when possible
- Decrease external forces
- Minimize extending joints beyond normal range of motion
- Minimize movements on uneven or slippery terrain
- Adequately prepare and warmup musculature prior to movement
- Take regular breaks
- Increase overall muscle flexibility
- Prepare according to temperature – increase warmup in cold conditions

For industry/workplace specific recommendations contact an OHCOW Ergonomist.

## Additional Resources

ErgoInfo General MSDs

MSD Prevention Guideline for Ontario

World Health Organization - Muskuloskeletal Health

OHCOW