

What is a Muscle Strain or Tear?

Skeletal muscle is a bundle of contractile tissue that shortens to produce movement and/or to provide stability within the body. Muscle tissue is surrounded by fascia (fibrous connective tissue) and is attached to bone (and sometimes other structures) by tendon, or fibrous tissue extensions. Most muscles cross at least one joint, and are attached to the articulating (moving) bones that form that joint. Muscle produces movement or stabilization by exerting force on its tendon, which in turn pulls on its attachment (bone). Muscles often occur in opposition surrounding a joint, allowing for movement in opposite directions or stabilization (no movement) of the joint.

A muscle strain is commonly referred to as a “pulled muscle,” which is a way to describe the overstretching or tearing of muscle fibers. Strains can occur in either the muscle itself or in the tendon attached to the muscle. They vary in severity from mild to severe. Mild strains are where only a few muscle fibers are stretched or torn (Grade 1). Severe strains are where the entire muscle tears into two separate pieces or tears away from its tendon (Grade 3).

A muscle strain or tear may occur through sudden trauma or overuse (repetitive stress placed on tissues with inadequate recovery).

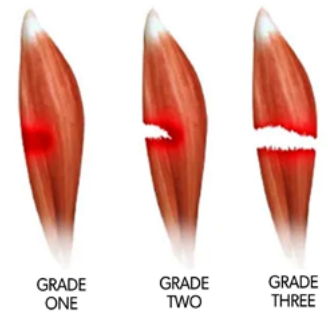







FIGURE 1: Grades of Muscle Strains/Tears

Ergonomic Risk Factors Contributing to Muscle Strain/Tear

FORCE	POSTURE	INADEQUATE RECOVERY TIME	TEMPERATURE	COMBINATION EFFECT
 <ul style="list-style-type: none"> Forceful exertion – either creating or resisting movement 	 <ul style="list-style-type: none"> Awkward postures (e.g., unbalanced loading, extending joints beyond an individual’s normal range of motion, etc.) 	 <ul style="list-style-type: none"> Similar muscle actions performed multiple times in a short period Sustained muscle contractions without enough rest May lead to fatigue, weakness, and/or altered movement patterns 	 <ul style="list-style-type: none"> Warmer environments increase chance of dehydration Colder environments decrease muscle flexibility 	 <ul style="list-style-type: none"> Many or all of the risk factors act in synergy to increase the risk of developing muscle strains/tear

Specific Recommendations for Prevention

- Avoid/minimize forceful exertion when possible
- Minimize extending joints beyond normal range of motion
- Adequately prepare and warmup musculature prior to movement
- Take regular breaks
- Increase overall muscle flexibility
- Prepare according to temperature – increase fluid intake in hot conditions, increase warmup in cold conditions

For industry/workplace specific recommendations contact an OHCOW Ergonomist.

Additional Resources

- [ErgoInfo General MSD](#)
- [MSD Prevention Guideline for Ontario](#)
- [World Health Organization - Musculoskeletal Health](#)