



## Repetition and excessive force

Two common risk factors for musculoskeletal injuries (MSI) are:

- Repetition
- Excessive force

### What is considered repetitive?

A task is repetitive when the same muscle groups are working all day without sufficient rest.

### What is considered excessive force?

A force is excessive when the active muscle group is working beyond its limits. This often occurs with smaller muscle groups.



Together, repetition and excessive force combine to create a risk factor greater than either individually.

### Task: Manual Rebar Tying

Risk factors:

- Performing many repetitions
- Gripping and twisting overloads smaller forearm muscles



### Task: Concrete Chipping

Risk factors:

- Bending over at waist for long periods of time
- Applying force to control jackhammer



### Task: Shovelling

Risk factors:

- Shovelling all day
- Applying force to move heavy asphalt



*Photos courtesy of California OSHA and Heather Kahle (WorkSafeBC).*