MSI risk assessment

Instructions

1. Review the guideline on conducting MSI risk assessments. The guideline provides descriptions of physical demand MSI hazards and contributing multipliers to consider as part of a risk assessment.
2. Complete the description section at the bottom of this page. Note which worker or workers are being assessed.
3. This worksheet has six sections that address different MSI hazards. The first part of each section covers the physical hazards followed by the MSI multipliers.
4. Consider the low, moderate or high-risk criteria for each hazard. Always select the **highest level of risk** that is present.
5. With contributing multipliers, decide if any contributing hazards are present. Presence of one or more multipliers may increase the overall risk of sustaining an MSI.
6. For each of the six sections, record observations of the task as needed.

On the final page, summarize the results on the MSI risk assessment summary table. The results will guide you in determining which MSI hazards pose a greater risk to workers so you can make a priority list of which MSI hazards to address.

MSI risk assessment task description:

Job or task being assessed:

Completed by:

Description of job task:

Position:

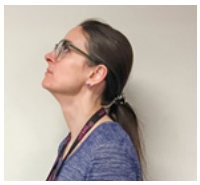
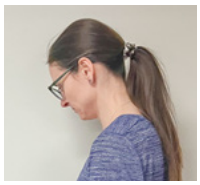
Date of assessment:

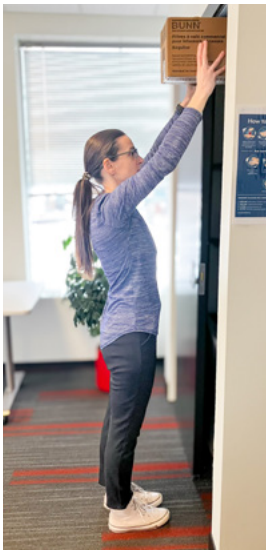
Is the Workplace Safety and Health Committee reviewing the assessment?

☐ Yes ☐ No

1. Awkward posture

Identify if any of the MSI hazards are present. Check the box with the highest level of risk.

Neck		
Low risk	Moderate risk	High risk
☐ working with the neck bent in any direction less than 2 hours total per day	☐ working with the neck bent more than 30° in any direction for 2-4 hours per day ☐ Looking up  ☐ Looking down  ☐ Looking sideways  	☐ working with more than 45° more than 4 hours per day without any support or the ability to vary posture

Shoulders		
Low risk	Moderate risk	High risk
☐ working with elevated arms less than 2 hours per day	☐ working with hands above the head for 2-4 hours per day ☐ working with the elbows above shoulder level for 2-4 hours per day	☐ working with hands above the head more than 4 hours total per day ☐ working with elbows above shoulder level more than 4 hours per day total 

Back		
Low risk	Moderate risk	High risk
☐ working with the back bent in any direction < 2 hours per day	☐ working with the back bent more than 30° in any direction for 2-4 hours total per day 	working with the back bent forward without support or the ability to vary posture for: ☐ more than 30° more than 4 hours total per day ☐ more than 45° more than 2 hours total per day 

Knee		
Low risk	Moderate risk	High risk
☐ squatting or kneeling for less than 2 hours per day	☐ squatting 2-4 hours total per day ☐ kneeling 2-4 hours total per day 	☐ squatting or kneeling more than 4 hours total per day 

MSI hazard multipliers

☐ **Work organization:** duration and frequency of tasks will intensify the exertion and limit tissue recovery. Describe the work-recovery cycles, task variability and work rate:

☐ **Features of workplace layout:** how workers access items/shelves/objects, working heights, flooring and/or seating options.

☐ **Tools and objects:** evaluate the features of the objects handled by the workers. Describe size and shape of handles, tools, load conditions and/or weight distributions.

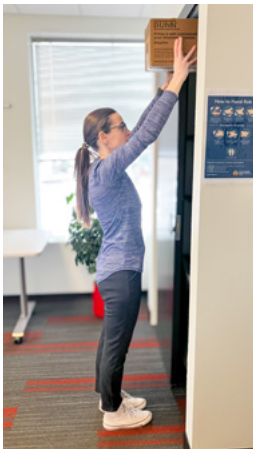
☐ **Environmental elements:** is it extremely hot or cold?

☐ **Psychological and cognitive demands:** describe how much control workers have of their workday. What is the pace and speed of work required, are workers recognized for their efforts and/or does the workplace have civility and respect?

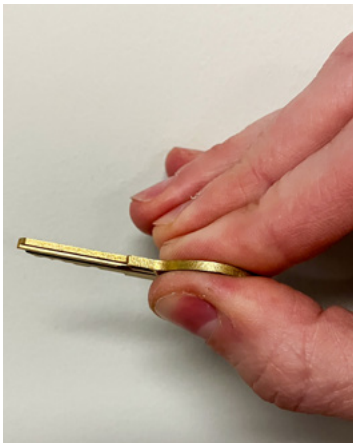
Notes and observations of awkward postures:

2. Forceful exertions

Identify if any of the MSI hazards are present. Check the box with the highest level of risk.

Lifting and lowering		
Low risk	Moderate risk	High risk
☐ any lifting or lowering that is less than moderate risk	Lifting or lowering objects: ☐ above shoulder height, below the knees, or at arm's length ☐ twice or more per minute more than 1 hour per shift ☐ that weigh 2.3 kg (5 lb) or more, twice or more per minute ☐ that weigh more than 8.2 kg (18 lb) once per shift  **Note:** if any box in moderate is selected progress to the high risk column	☐ if you find any lifting or lowering that presents a moderate risk, do a lifting/lowering risk assessment for a high-risk evaluation (see page 8)

Pushing and pulling		
Low risk	Moderate risk	High risk
☐ pushing or pulling between shoulder and hip height ☐ pushing or pulling with arms close to the body ☐ pushing or pulling with neutral wrist/ hand postures ☐ pushing or pulling less than 2 meters	The following tasks should be reviewed with a force gauge: ☐ pushing or pulling at heights above shoulders or below knee  ☐ reaching away from the body ☐ wrists in a bent or twisted posture ☐ pushing or pulling in seated or kneeling postures ☐ pushing or pulling with only one arm/hand ☐ push or pull distance more than 2 meters but less than 5 meters	The following tasks should be identified and assessed by a specialist: ☐ pulling down from head and shoulder height ☐ pulling up from floor ☐ pulling up from elbow height ☐ pulling up from shoulder height ☐ pushing down from elbow height ☐ standing one-handed pushes or pulls ☐ seated pushes or pulls

Pinch gripping		
Low risk	Moderate risk	High risk
☐ pinch gripping unsupported less than 2 hours per day	☐ pinch gripping unsupported objects 	Pinch gripping unsupported objects that weigh more than 1kg (2lb) or pinch gripping with a force of 2kg (4lb): ☐ more than 4 hours/day total ☐ more than 3 hours/day with repetitive motions every few seconds ☐ more than 3 hours/day with the wrist in the following positions: ☐ ≥30° flexion ☐ ≥45° extension ☐ ≥30° ulnar deviation

Power gripping		
Low risk	Moderate risk	High risk
☐ power gripping unsupported objects less than 2 hours/ day	☐ power gripping unsupported objects that weigh 4.5kg (10lb) or more per hand more than 2 hours/day 	Power gripping unsupported objects that weigh 4.5kg (10lb) or more per hand: ☐ more than 4 hours/day total ☐ with a repetitive motion every few seconds more than 3 hours/day total ☐ more than 3 hours/day total with the wrist bent in any of the positions: ☐ ≥30° flexion ☐ ≥45° extension ☐ ≥30° ulnar deviation

MSI hazard multipliers

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Notes and observations of forceful exertions:

Lift and lower hazard assessment (to determine if it is high risk)

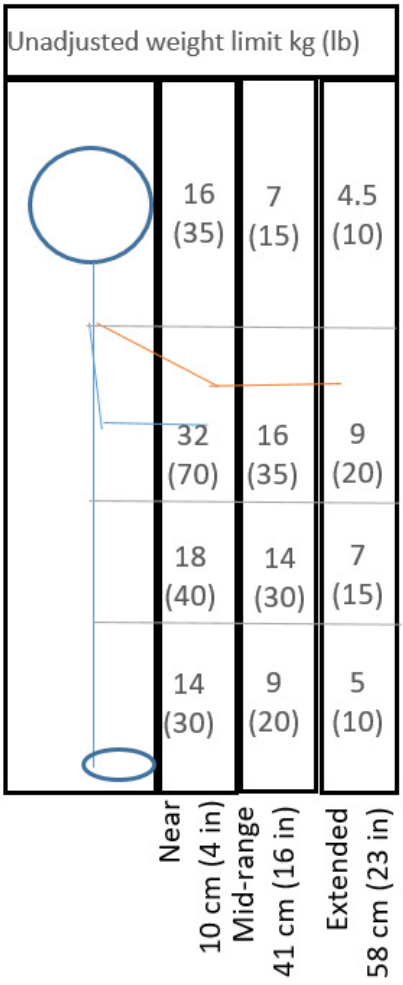
Use this evaluation tool to determine the safe lifting limit for potentially high hazard MSI lift and lower tasks. If the job or task includes various postures or different weights for lifting and lowering, assess both cases:

- The worst case - the heaviest weight and most awkward posture
- The most common case - when evaluating duration and frequency in step 3, consider all the lifting done in a typical day.

Step 1 - Record the actual weight of the lifted object. Select the criteria below:

☐ heaviest/most awkward
☐ most common
Actual weight =
☐ **kg** or ☐ **lb**

Step 2 - Evaluate the unadjusted weight limit. Look for the most extreme hand position during the lifting/lowering. Mark it on the following diagram:



Unadjusted weight limit:

Step 3 - Assess frequency and duration. Learn how often the worker lifts per minute and how many total hours per day the worker spends lifting. Look up the frequency and duration adjustments in the table below:

how many lifts/ minute	how many hours/day?		
	< 1 hour	1-2 hours	>2 hours
1 lift every 2-5 mins	1.00	1.00	0.85
1 lift/min	0.95	0.95	0.70
2-3 lifts/min	0.90	0.85	0.60
4-5 lifts/min	0.85	0.70	0.50
6-7 lifts/min	0.60	0.50	0.35
8-9 lifts/min	0.40	0.30	0.15
10+ lifts/min	0.20	0.10	0.05

Note: for lifting done < once every 5 minutes, use 1.0

Frequency + duration factor = Factor

Step 4 - Identify the twisting adjustment. If the worker twists > 45° the twisting adjustment is 0.85. Or use 1.00

Twisting adjustment: Twisting

Step 5 - Determine safe lift/lower limit. To calculate the weight limit, multiply steps 2 through 4.

X X =

Step 2 value X Step 3 value X Step 4 value = Weight limit

Compare the actual weight to the weight limit

Actual weight Weight limit

Step 6 - Review results. If the actual weight in step 1 is more than the weight limit in step 5, you must implement control measures.

3. Repetitive motion

Identify if any of the MSI hazards are present. Check the box with the highest level of risk.

Neck , shoulders, elbows, wrists and hands		
Low risk	Moderate risk	High risk
Some repetition, but less than 2 hours/day total: ☐ neck ☐ shoulders ☐ elbows ☐ wrists ☐ hands	Repeating the same motion every few seconds with little or no change for 2-6 hours/ day total: ☐ neck ☑ shoulders ☐ elbows ☑ wrists ☑ hands	Repeating the same motion every few seconds with little or no variation more than 6 hours/day total: ☐ neck ☐ shoulders ☐ elbows ☐ wrists ☐ hands

Wrist and hands (excludes typing)		
Low risk	Moderate risk	High risk
☐ some repetition but less than 2 hours	☐ repeating the same motion every few seconds with little or no variation for more than 2 hours/day total	☐ repeating a high, forceful hand motion every few seconds with little or no variation for more than 2 hours/day total, with wrists bent in any of the following postures: ☐ ≥30° flexion ☐ ≥45° extension ☐ ≥30° ulnar deviation

Wrist, hands & fingers (typing)		
Low risk	Moderate risk	High risk
☐ intensive typing for less than 4 hours/day total	☐ intensive typing for 4-7 hours/day total	☐ intensive typing for more than 7 hours/day total ☐ intensive typing for more than 4 hours/day total in any of the following postures: ☐ ≥30° flexion ☐ ≥45° extension ☐ ≥30° ulnar deviation

MSI hazard multipliers

☐ **Work organization:** duration and frequency of tasks will intensify the exertion and limit tissue recovery. Describe the work-recovery cycles, task variability and work rate:

☐ **Features of workplace layout:** how workers access items/shelves/objects, working heights, flooring and/or seating options.

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☐ **Environmental elements:** is it extremely hot or cold?

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Notes and observations of repetitive motion(s):

4. Vibration

Identify if any of the MSI hazards are present. Check the box with the highest level of risk.

<table>
<tr><th colspan="2">Hand-arm vibration</th></tr>
<tr><td>Moderate risk</td><td>High risk</td></tr>
<tr><td>☐ using high vibration tools more than 30 minutes per day total</td><td rowspan="2">Step 1:

There are three ways to determine the vibration value for a tool:

1. Ask the manufacturer.

2. Look it up in vibration database.

3. Measure the vibration independently. Follow ISO standard 5349-1:2001 and ISO standard 5349-2:2001.

Step 2:

Determine how many hours per day the worker uses vibrating tools (the amount of time the tool is vibrating in the worker’s hands). This is the total exposure time.

Step: 3:

The left column show total exposure time. The right column shows the maximum vibration value considered safe for nearly all workers for a given daily exposure time.

<table><tr><th>Total daily exposure time in hours</th><th>maximum vibration value considered safe for nearly all workers (m/s²)</th></tr><tr><td>8 hours</td><td>5</td></tr><tr><td>6 hours</td><td>5.8</td></tr><tr><td>4 hours</td><td>7.1</td></tr><tr><td>2 hours</td><td>10</td></tr><tr><td>1 hour</td><td>14.1</td></tr><tr><td>0.5 hour</td><td>20</td></tr></table>
The table above is adapted from the 2015 American Conference of Governmental Industrial Hygienists limits.</td></tr>
<tr><td>☐ using moderate vibration hand tools more than 2 hours per day total</td></tr>
</table>

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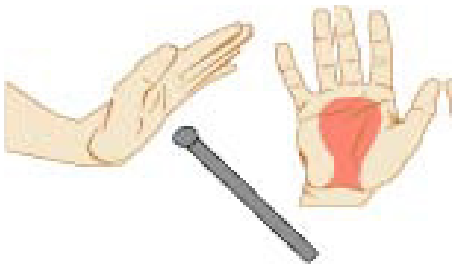
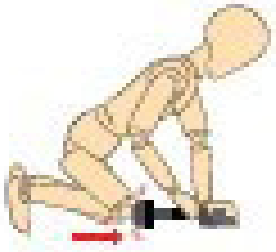
Notes and observations of vibration:

5. Contact stress

Identify if any of the MSI hazards are present. Check the box with the highest level of risk.

Hands and wrists		
Low risk	Moderate risk	High risk
☐ using palm/hand/wrist as a hammer more than 10 times/hour for less than 2 hours/day total	☐ using a palm/hand/wrist as a hammer more than 10 times/hour or more than 2 hours total/day 	☐ using palm/hand/wrist as a hammer more than once/minute or for more than 2 hours/day total

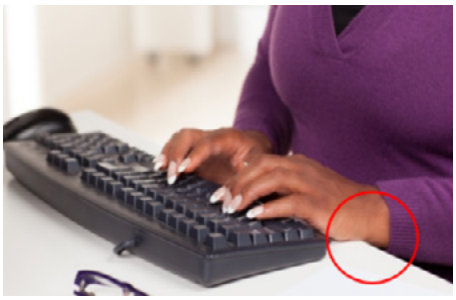
Knees		
Low risk	Moderate risk	High risk
☐ using knee as a hammer less than 10 times/hour less than 2 hours/day total	☐ using knee as a hammer more than 10 times/hour or more than 2 hours/day 	☐ using a knee as a hammer more than once/ minute for more than 2 hours/day total

Local Contact Stress

When evaluating local contact stress, consider body parts that are rubbing up, touching against hard, sharp or unyielding surfaces either for an extended period or repetitively throughout a shift. Evaluate the contact stress at the knees, hips, torso and/or elbows. The surfaces/objects could be a workstation, the floor, a ladder, a tool, a desk or a handle.

Low risk	Moderate risk	High risk
The following body parts touch, or rub up against a hard, sharp or inflexible surface less than 1hour/ day total ☐ knees ☐ hips ☐ elbows ☐ wrists ☐ fingers	The following body parts touch, or rub up against a hard, sharp or inflexible surface more than 1 hour/day total, but less than 2 hours/day total: ☐ knees ☐ hips ☐ elbows ☐ wrists ☐ fingers ☐ contact leaves marks or depressions ☐ other hazards present with contact stress ☐ grip forces ☐ awkward postures	The following body parts touch, or rub up against a hard, sharp or inflexible surface more than 2 hours/day total: ☐ knees ☐ hips ☐ elbows ☐ wrists ☐ fingers ☐ contact leaves marks or depressions ☐ other hazards present with contact stress ☐ grip forces ☐ awkward postures

Examples of contact stress:



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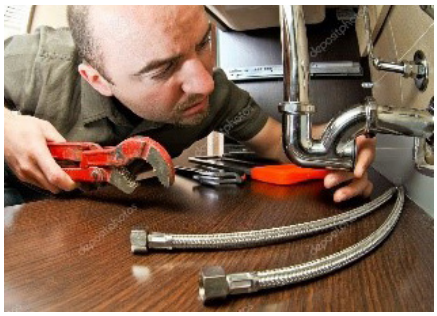
Notes and observations of contact stress:

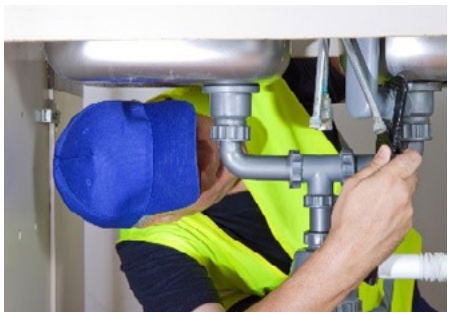
6. Limitations of motion

Identify if any of the MSI hazards are present. Check the box with the highest level of risk.

Confined postures		
Low risk	Moderate risk	High risk
☐ working with a body part in a sustained or awkward posture for less than 2 hours/day total	☐ working with a body part in a sustained or awkward posture for to 2-4 hours/day total	☐ working with a body part in a sustained or awkward posture for more than 4 hours/day total

Confined sustained muscular contraction		
Low risk	Moderate risk	High risk
☐ working with a sustained contraction for less than 2 hours/day total	☐ working with a sustained contraction for to 2-4 hours/day total	☐ working with a sustained contraction for less than 4 hours/day total





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Notes and observations of limitations of motion:

Summary of MSI hazards table:

Complete the table below and record the MSI hazard multipliers with each respective hazard. Prioritize addressing MSI hazards by selecting the higher risk hazards and the hazards with increased multipliers.

With the Workplace Safety and Health Committee, identify controls to reduce or eliminate for the MSI hazards identified through the assessment.

	Low Risk	Moderate Risk	High Risk	MSI hazard multipliers:
Awkward postures	☐	☐	☐	
Forceful exertion	☐	☐	☐	
Repetitive motion	☐	☐	☐	
Contact stress	☐	☐	☐	
Vibration	☐	☐	☐	
Limitations on motion	☐	☐	☐	