

ENVIRONMENT, SAFETY & HEALTH DIVISION

Chapter 54: [Ergonomics](#)

Quick Start Summary

Product ID: [656](#) | Revision ID: 2809 | Date published: 31 October 2025 | Date effective: 31 October 2025

URL: <https://www-esh.slac.stanford.edu/eshmanual/references/ergonomicsQuickstart.pdf>

1 Who needs to know about these requirements

The requirements of Ergonomics apply to workers, supervisors, ergonomic specialists, ESH coordinators, the ergonomics program manager, Occupational Health, and Facilities Management and Planning.

2 Why

Activities that require work in a restricted space or with awkward or static postures, repetitive motions, pressure points, vibrating tools, or forceful exertions can lead to injuries and reduced worker effectiveness.

3 What do I need to know

Workers and supervisors should be actively screening activities and workplace conditions with potential ergonomic risks and are strongly encouraged to engage their ESH coordinator or contact the program manager and/or OHC for assistance, ranging from informal consultations to formal evaluations.

Workers who use computers for more than two hours a day must complete ESH Course 291, Ergonomics Training - Office Worker ([ESH Course 291](#)), either when they arrive at SLAC or when moving to a different office. Formal ergonomic evaluations ([ESH Course 291EV](#)), of home or SLAC offices, when warranted are performed by an ergonomic specialist provided by the Occupational Health Center (OHC). Formal evaluations and informal consultations are also performed at non-office locations, such as machine shops and laboratories, and a voluntary industrial ergonomic awareness course ([ESH Course 323](#)) is available. Supervisors and workers are expected to implement the recommendations resulting from formal evaluations. A back safety course ([ESH Course 410](#)) is also available.

4 When

These requirements take effect 31 October 2025.

5 Where do I find more information

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 54, “Ergonomics”](#)

Or contact the [program manager](#).

Chapter 54

Ergonomics

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URL: <https://www-esh.slac.stanford.edu/eshmanual/pdfs/ESHch54.pdf>

1 Purpose

The purpose of this program is to prevent ergonomic injuries.

It covers identifying, evaluating, and mitigating ergonomic risks. These risks stem from activities that require work in a restricted space or with awkward or static postures, repetitive motions, pressure points, vibrating tools, or forceful exertions, all of which can lead to injuries and reduced worker effectiveness.

It applies to workers, supervisors, ergonomic specialists, ESH coordinators, the ergonomics program manager, Occupational Health, and Facilities Management and Planning.

2 Roles and Responsibilities

Functional roles and general responsibilities for each are listed below. More detailed responsibilities and when they apply are provided in the procedures, processes, and requirements.

The roles may be performed by one or more individuals and one individual may play more than one role, depending on the structure of the organizations involved. Responsibilities may be delegated.

2.1 Worker

- Works with supervisor to identify ergonomic risk factors, for example by evaluating activities using the [Ergonomics: Industrial Ergonomics Screening Checklist](#) and by comparing lifting activities to established thresholds (see [Ergonomics: Ergonomic Evaluation Procedures](#))
- Takes precautions to prevent injury, including following guidance to reduce ergonomic risks in job safety analyses (JSAs), activity training and authorizations (ATAs), and work procedures
- Promptly reports conditions that may result in ergonomic injuries and any discomfort, pain, or ergonomic concern associated with a particular task to supervisor
- Contacts their ESH coordinator directly for guidance
- Completes any required training and ergonomic evaluation (see Section 4, “Training”)
- Uses equipment and follows work practices described in training and ergonomic evaluation reports
- Visits the Occupational Health Center (OHC) with any work-related medical concerns and follows any work restrictions established by OHC

2.2 Supervisor

- Ensures that work is planned and evaluated to reduce ergonomic risks. Coordination with the ESH coordinator and use of the [Ergonomics: Industrial Ergonomics Screening Checklist](#) will facilitate this.
- Assigns ergonomic training as appropriate (see Section 4, “Training”)
- When warranted, ensures an ergonomic evaluation is requested (see [Ergonomics: Ergonomic Evaluation Procedures](#))
- Reviews ergonomic evaluation reports and ensures prompt implementation of recommendations, including worksite corrections/improvements and behavioral or work practice changes of affected workers
- Directs workers who are injured or experiencing reoccurring discomfort to the OHC
- Assists workers in following work restrictions established by the OHC

For workers performing routine lifting, in addition to above,

- Evaluates associated risks, using such guidance as the *threshold limit values (TLVs)* (see [Ergonomics: Ergonomic Evaluation Procedures](#), Table 1) or similar

Note Although use of the TLVs for lifting is recommended, use of other tools such as the [NIOSH lifting equation](#) is acceptable. If additional guidance is needed, contact ergonomics-slac@slac.stanford.edu.

- Ensures workers observe the TLVs
- If activities are determined to be near a threshold in the TLVs for lifting, documents mitigations in a JSA, ATA, and/or work procedure
- If activities are determined to exceed the thresholds in the TLVs for lifting, and cannot be mitigated, engages the ESH coordinator, who will determine the need for a formal evaluation by an ergonomic specialist. Mitigations must be documented in a JSA, ATA, and/or work procedure

2.3 Occupational Health Center

- Provides resources, including ergonomic specialists, and assists with program implementation and assessment
- Assists line management with identifying activities/tasks with ergonomic risks
- Provides ergonomic evaluations/consultations (for both office and non-office tasks) as requested
- Recommends work environment or work practice changes to decrease the risk of injury
- Evaluates and assigns/documents work restrictions related to any ergonomic injury/illness
- Follows up after the initial evaluation to determine if recommendations are being implemented and are effective
- Maintains records of ergonomic evaluations and support activities
- Assists with development of and provides ergonomics training
- Provides feedback for updates to the SLAC Furniture Guidelines and [SLAC Ergonomics Products List Catalog](#)

- Supports injury and illness data analysis and reports trends in ergonomic injury and/or incidence rates

2.4 ESH Coordinator

- Assists in identifying and evaluating activities with ergonomic risk and assists in implementing controls to mitigate those risks. Use of the [Ergonomics: Industrial Ergonomics Screening Checklist](#) will help facilitate this.
- Performs and/or assists with non-office ergonomic evaluations and helps determine when support from ergonomic specialists and/or formal evaluations are warranted
- Assists with the investigation of ergonomic and materials handling injuries/illnesses, helps identify and implement corrective actions, and follows up to ensure they are implemented and effective
- Supports the analysis of ergonomic injury and related first aid data and lessons learned

2.5 Facilities Management and Planning Department

- Engages the ergonomic specialist as needed
- Maintains the SLAC Furniture Guidelines and seeks input from the ergonomics program manager and specialist on content.
- When height-adjustable workstations or special chairs are recommended, assists with selection and coordinates removal and installation

2.6 Ergonomics Program Manager

- Develops, implements, and assesses program
- Maintains this chapter and associated documents
- Identifies, develops, and maintains training and assists with the qualification and authorization of trainers
- Assists in identifying and evaluating activities with ergonomic risks and implementing controls to mitigate those risks
- In an oversight capacity, evaluates field work to help identify potential issues and opportunities for improvement
- Assists in investigating ergonomic injuries/illnesses, provides feedback on corrective actions, and follows up to ensure corrective actions are implemented and effective
- Reviews ergonomic injuries annually to look for trends and possible program enhancements
- Provides feedback for updates to the SLAC Furniture Guidelines and [SLAC Ergonomics Products List Catalog](#)

3 Procedures, Processes, and Requirements

These documents describe the detailed requirements for this program and how to implement them:

- [Ergonomics: Ergonomic Evaluation Procedures](#) (SLAC-I-730-0A21S-059). Describes process for requesting, performing, and following up on ergonomic evaluations

These documents provide useful guidance; their use is not mandatory:

- [Ergonomics: Industrial Ergonomics Screening Checklist](#) (SLAC-I-730-0A21J-052). Checklist for identifying and minimizing industrial (non-office) ergonomic hazards

These are the forms and tools for this program

- [Ergonomics Request Form](#) (SmartSheet). Form for requesting ergonomic evaluations and services
- ergonomics-slac@slac.stanford.edu. E-mail for questions or support

These are other program documents and resources:

- [Ergonomics Program Site](#) (SharePoint). Includes checklists for identifying risks and guides to using computers and furniture safety
- SLAC Furniture Guidelines
- [SLAC Ergonomics Products List Catalog](#)

4 Training

Workers who use computers for more than two hours a day must complete the following course (either upon arrival at SLAC or when moving to a different office):

- ESH Course 291, Ergonomics Training - Office Worker ([ESH Course 291](#))

Workers who are experiencing pain or discomfort from their work at a computer workstation should complete the following course:

- ESH Course 291EV, Ergonomic Evaluation - Office Worker ([ESH Course 291EV](#))

Workers who perform industrial or laboratory tasks with known or potential ergonomic risk factors and/or work in non-office locations with ergonomic risk factors and their supervisors should complete the following course:

- ESH Course 323, Industrial Ergonomic Awareness ([ESH Course 323](#))

Workers who use mobile mechanical lifting devices and their supervisors should complete the following course:

- ESH Course 127, Safe Use of Mobile Mechanical Lifting Devices ([ESH Course 127](#))

Workers who use hoisting and rigging equipment regularly or perform lifting/manual handling tasks (see [Ergonomics: Ergonomic Evaluation Procedures](#)) and their supervisors should complete the following course:

- ESH Course 410, Back Safety Training ([ESH Course 410](#))

5 Definitions

activity with ergonomic risks. A work activity that possesses identified risk factors for workers to develop an RMI or MSD

ergonomics. The multidisciplinary science that applies design principles based on the physical and psychological capabilities of people to the design of jobs, equipment, products, and workplaces

musculoskeletal disorder (MSD). An injury or disorder of the muscles, nerves, tendons, joints, cartilage, and supporting structures of the upper and lower limbs, neck, and lower back that are caused, precipitated, or exacerbated by sudden exertion or prolonged exposure to physical factors such as repetition, force, vibration, or awkward posture. Also called *work-related musculoskeletal disorder (WMSD)*.

repetitive motion injury (RMI). An MSD resulting from a repetitive job, process, operation, or similar work activity. Injuries include carpal tunnel syndrome, tendinitis, tenosynovitis, and muscle strain. Also called cumulative trauma disorder (CTD) and repetitive strain injury (RSI).

threshold limit value (TLV). Recommended guidelines for occupational exposure published by the American Conference of Governmental Industrial Hygienists (ACGIH). TLVs represent the average concentration for an eight-hour workday and a 40-hour workweek to which nearly all workers may be repeatedly exposed without adverse effect.

6 References

6.1 External Requirements

The following are the external requirements that apply to this program:

- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 7, “General Industry Safety Orders”, Group 15, “Occupational Noise”, Article 106, “Ergonomics”, Section 5110, “Repetitive Motion Injuries” ([8 CCR 5110](#))

6.2 Related Documents

SLAC Environment, Safety, and Health Manual (SLAC-I-720-0A29Z-001)

- [Chapter 2, “Work Planning and Control”](#)

Other SLAC Documents

- SLAC Training Assignment ([STA](#))

Other Documents

- American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))
- California Department of Industrial Relations and the National Institute for Occupational Safety and Health (NIOSH). Ergonomic Guidelines for Manual Material Handling ([DHHS \(NIOSH\) Publication No. 2007-131](#))
- Stanford University, Department of Environmental Health and Safety. [Ergonomics](#)

Chapter 54: [Ergonomics](#)

Ergonomic Evaluation Procedures

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URL: <https://www-esh.slac.stanford.edu/eshmanual/references/ergonomicsProcedEval.pdf>

1 Purpose

The purpose of these procedures is to increase worker effectiveness and prevent injuries.

They cover identifying, evaluating, and mitigating office and non-office ergonomic risks.

They apply to workers, supervisors, ergonomic specialists, ESH coordinators, the ergonomics program manager, Occupational Health, and Facilities Management and Planning.

2 Procedures

Workers and supervisors should actively screen activities and workplace conditions with potential ergonomic risks and are strongly encouraged to engage their ESH coordinator or contact the ergonomics program manager and/or the Occupational Health Center (OHC) for assistance, ranging from informal consultations to formal evaluations.

2.1 Office Ergonomic Evaluation

Office ergonomic evaluations, both at home and at SLAC, are formal, conducted by an OHC ergonomic specialist, and documented in an evaluation report.

Step	Person	Action
1.	Worker	If not completed within last 2 years, completes ESH Course 291, Ergonomics Training - Office Worker (ESH Course 291) Discusses results of workstation self-assessment in ESH Course 291 with their supervisor Implements identified workstation/behavioral modifications
2.	Supervisor	If warranted, adds ESH Course 291EV to the worker's STA and instructs worker to submit an evaluation request <i>Note: computer workstation evaluations are optional but personnel who are experiencing pain or discomfort from their computer work should have course 291EV added to their STA and receive an evaluation.</i>
3.	Worker	Requests an ergonomic evaluation by completing an Ergonomics Request Form
4.	Ergonomic specialist	Reviews the request and schedules appropriate ergonomic service

Step	Person	Action
		<p><i>Note: not all requests require a full evaluation. In some cases, a short consultation or showroom visit will address the issue.</i></p> <p><i>As part of this process, there may be an appointment arranged at the ergonomics showroom.</i></p> <ul style="list-style-type: none"> ▪ If an evaluation is completed, sends the report with recommendations to the worker and supervisor and cc's OHC ▪ If a consultation or a showroom visit is completed, sends a detailed email to the worker and supervisor summarizing the session and providing next steps
5.	Supervisor and worker	Review and implement recommendations in the evaluation report or detailed email (e.g., procures equipment, arranges for installation, modifies behaviors)
6.	Facilities Management and Planning	For chairs and furniture identified in the Ergonomics Products Catalog , including height-adjustable workstations, coordinates ordering and installation
7.	Worker	Implements the recommended work practice modifications Informs the supervisor if ergonomic concerns arise
8.	Supervisor	Monitors implementation of recommended work practice modifications
9.	Supervisor/worker	Requests additional support/follow up from SLAC ergonomics as needed
10.	OHC and/or ESH coordinator	Provides follow-up support as necessary or as requested Tracks implementation of report recommendations
11.	OHC	Maintains evaluation reports and any associated records

2.2 Non-office Ergonomic Evaluation

Non-office spaces are any workspaces that are not offices, for example, laboratories, machine shops, and beam hutches. For non-office evaluations, the emphasis is on workers and supervisors working together to identify and minimize hazards (for guidance see the [Ergonomics: Industrial Ergonomics Screening Checklist](#)) and contacting their ESH coordinator for assistance.

When appropriate, a formal evaluation by an ergonomics specialist may be performed, following this procedure.

Step	Person	Action
1.	Supervisor/ESH coordinator	Assesses activities (using the Ergonomics: Industrial Ergonomics Screening Checklist) and determines if an ergonomic specialist is needed
2.	Supervisor/ESH coordinator	Requests an ergonomic evaluation by completing an Ergonomics Request Form
3.	Ergonomic specialist	Coordinates with supervisor and the ESH coordinator to perform the evaluation
4.	Ergonomic specialist	Performs evaluation at worker's location Documents evaluation and recommendations in evaluation report Sends evaluation report to supervisor, worker, and ESH coordinator

Step	Person	Action
5.	Supervisor	Reviews any work practice recommendations with worker Implements recommendations noted in the evaluation report
6.	Worker	Modifies work practices as recommended in the evaluation report Informs supervisor if ergonomic concerns arise
7.	Supervisor	Monitors implementation of recommended work practice modifications
8.	Supervisor/worker	Requests additional support/follow up from OHC if desired
9.	OHC and/or ESH coordinator	Provides follow-up support as necessary or as requested Tracks implementation of report recommendations
10.	OHC	Maintains evaluation reports and records

2.3 Lifting Activities

For workers who perform routine lifting, supervisors must evaluate associated risks, using such guidance as the *threshold limit values (TLVs)* in Table 1 below or similar. (See Figure 1 for a simplified version.)

Note Although use of the TLVs for lifting is recommended, use of other tools such as the [NIOSH lifting equation](#) is acceptable. If additional guidance is needed, contact ergonomics-slac@slac.stanford.edu.

If activities are determined to be near a threshold in the TLVs for lifting, the supervisor must document mitigations in a job safety analysis (JSA), activity and training authorization (ATA), and/or work procedure. If activities are determined to exceed the thresholds in the TLVs for lifting, and cannot be mitigated, the supervisor must engage the ESH coordinator, who will determine the need for a formal evaluation by an ergonomic specialist.

Workers performing such lifts are to observe these thresholds. Workers routinely performing lifting/manual handling tasks, and their supervisors, should complete ESH Course 410, Back Safety Training ([ESH Course 410](#)).

Table 1 Maximum Weights (in pounds) and Frequencies for Lifting

Horizontal/vertical Location	Close 0 to 12"	Intermediate 12 to 24"	Far 24 to 31"
Low-frequency lifting: less than 2 hours/day or more than 2 hours/day with less than 12 lifts/hour			
Shoulder to 12" above the shoulder	35	15	No known safe limit
Knuckle to chest	70	35	20
Shin to knuckle	40	30	15
Floor to shin	30	No known safe limit	No known safe limit
Moderate-frequency lifting: more than 2 hours/day and less than 30 lifts/hour			
Shoulder to 12" above the shoulder	30	10	No known safe limit
Knuckle to chest	60	30	15
Shin to knuckle	35	25	10
Floor to shin	20	No known safe limit	No known safe limit
High-frequency lifting: more than 2 hours/day and less than 360 lifts/hour			
Shoulder to 12" above the shoulder	24	No known safe limit	No known safe limit
Knuckle to chest	30	20	10
Shin to knuckle	20	15	5
Floor to shin	No known safe limit	No known safe limit	No known safe limit

Adapted from American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values for Lifting, in Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))

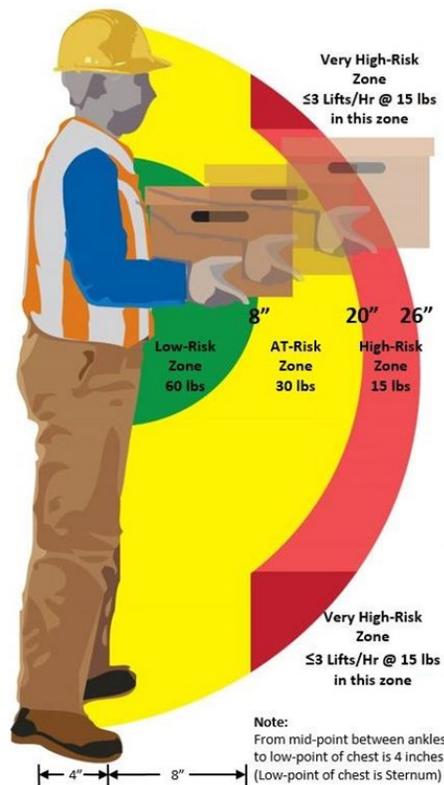


Figure 1 Maximum Weights (in pounds) and Frequencies for Lifting

3 Forms

The following forms and systems are required by this procedure:

- [Ergonomics Request Form](#) (SmartSheet). Form for requesting ergonomic evaluations and services
- ergonomics-slac@slac.stanford.edu. E-mail for questions or requesting support

The following checklist is provided as guidance:

- [Ergonomics: Industrial Ergonomics Screening Checklist](#) (SLAC-I-730-0A21J-052). Checklist for identifying and minimizing industrial (non-office) ergonomic hazards

4 Recordkeeping

The following recordkeeping requirements apply for this procedure:

- OHC maintains evaluation reports and records

5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 54, “Ergonomics”](#)
 - [Ergonomics Program Site](#) (SharePoint)
 - [SLAC Ergonomics Products List Catalog](#)

Other SLAC Documents

- SLAC Training Assignment ([STA](#))
- ESH Course 291, Ergonomics Training - Office Worker ([ESH Course 291](#))
- ESH Course 291EV, Ergonomic Evaluation - Office Worker ([ESH Course 291EV](#))
- ESH Course 410, Back Safety Training ([ESH Course 410](#))

Other Documents

- California Department of Industrial Relations and the National Institute for Occupational Safety and Health (NIOSH). Ergonomic Guidelines for Manual Material Handling ([DHHS \(NIOSH\) Publication No. 2007-131](#))
- American Conference of Governmental Industrial Hygienists (ACGIH). Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))
- Stanford University, Department of Environmental Health and Safety. [Ergonomics](#)

Industrial Ergonomics Screening Checklist

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ENVIRONMENT, SAFETY & HEALTH DIVISION

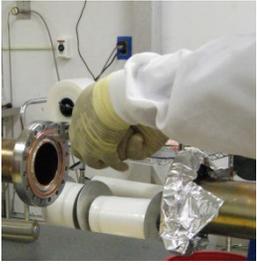
URL: <https://www-esh.slac.stanford.edu/eshmanual/references/ergonomicsChecklistIndustrial.pdf>

Supervisors and workers are to use this checklist to identify risk factors for work activities with ergonomic concerns and risk-reduction solutions (see [Ergonomics: Ergonomic Evaluation Procedures](#) [SLAC-I-730-0A21S-059]). Analyze the task and mark the check boxes for any risk factors. List the ergonomic control measures that mitigate the identified risk factors. Contact the ergonomics specialist at ergonomics-slac@slac.stanford.edu for additional assistance. There are no recordkeeping requirements for this checklist.

Task			
Location		Department	
Evaluated by		Date	

1. Lifting			
Risk Factor		Risk Factor Observed	Risk Control Measures (e.g., mechanical assists, making load smaller, additional help, lifting technique, postural awareness, microbreaks, work rotation)
	Lifting between 50 and 70 lbs	<input type="checkbox"/>	
	Lifting objects above shoulder level or below the knees	<input type="checkbox"/>	
	Lifting objects with the hands > 12 inches horizontally from the body	<input type="checkbox"/>	
	Frequent lifts Low-frequency: < 2 hours/day or > 2 hours/day with < 12 lifts/hour Moderate-frequency: > 2 hours/day and < 30 lifts/hour High-frequency: > 2 hours/day and < 360 lifts/hour	<input type="checkbox"/>	
<p>Note: if one or more items are checked, efforts should be made to minimize one or more of the following: load weight, load distance, and lifting frequency. For recommended weight limits, refer to the Oregon Safe Lifting Calculator.</p>			

2. Awkward Postures			
Risk Factor		Check If Observed	Risk Control Measures (e.g., mechanical assists, adjustable workstations, tools with alternate handles, stands, larger grips, postural awareness, microbreaks)
	Overhead work - hands above the head, elbows above the shoulders Cumulative duration > 2 hours/day	<input type="checkbox"/>	
	Neck or back is bent > 30°, little ability to vary posture Cumulative duration > 2 hours/day	<input type="checkbox"/>	
	Squatting or kneeling Cumulative duration > 2 hours/day	<input type="checkbox"/>	
	Bent wrists Cumulative duration > 2 hours/day	<input type="checkbox"/>	

3. Forceful Hand Movements			
Risk Factor		Check If Observed	Risk Control Measures (e.g., mechanical assists, tools with alternate handles, stands, larger grips, clamps, making load smaller)
	<p>Pinching to hold unsupported objects \geq 2 lbs/hand (using pinch force equivalent to holding half a ream of paper)</p> <p>Cumulative duration > 2 hours/day</p>	<input type="checkbox"/>	
	<p>Gripping \geq 10 lbs/hand to hold unsupported objects (using gripping force equivalent to squeezing car jumper cables)</p> <p>Cumulative duration > 2 hours/day.</p>	<input type="checkbox"/>	

4. Other (Body Movements, Vibration, Slip/Trip/Fall)			
Risk Factor		Check If Observed	Risk Control Measures (e.g., automated processes, gloves/grip handles, barriers, proper tool maintenance, microbreaks, work rotation, proper housekeeping)
Repeating the same movement with little or no variation (\geq 5 times/min) Cumulative duration > 2 hours/day		<input type="checkbox"/>	
Work involving sudden movements (e.g., starting a chainsaw)		<input type="checkbox"/>	
Vibration from high-vibration tools (e.g., chain saws, jackhammers, impact wrenches) > 30 minutes/day OR from moderate-vibration tools (e.g., saws, sanders) > 2 hours/day		<input type="checkbox"/>	
Work around potential slip/trip/fall hazards (e.g., loading docks, stairs, wet/greasy surfaces)		<input type="checkbox"/>	

References

- Based on Stanford University, Department of Environmental Health and Safety. [Ergonomics Screening Tool](#) (OHS 14-026)
- American Conference of Governmental Industrial Hygienists. Threshold Limit Values for Lifting, in Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) ([ACGIH TLVs and BEIs](#))
- Washington State Department of Labor and Industries. Caution Zone Checklist and Hazard Zone Checklist (available from [Evaluation Tools](#))
- Oregon Occupational Safety and Health Division. [Safe Lifting Calculator](#)