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1. Purpose

University of Alaska Anchorage (UAA) employees, student workers, faculty, staff, and outside contractors are at risk for work-related ergonomic injuries. The hazards associated with ergonomic injuries can be substantially reduced by using the equipment properly and taking precautions. This program for Ergonomic and Back Safety is intended to ensure workers are knowledgeable in ergonomic hazards and the steps to be taken to protect themselves and others.

2. Objective

UAA, in its continuing effort to provide personnel with safe, healthful working conditions, and to comply with the Occupational Safety and Health Act is implementing the following program for Ergonomic and Back Safety to protect people working at the University, by helping employees, student workers, faculty, staff, and outside contractors better understand ergonomics and injury prevention.

3. Scope

This program applies to UAA employees, student employees, faculty, staff, and outside contractors working at UAA.

4. Definitions

Awkward Body Posture - Sustained holding of a bent position of the neck, back, hands/wrists, arms raised above shoulder level or arms extended out in front of the body.

Contact Stress - Pressure on soft tissues of the body, such as the soft part of the palm, wrist or the sides of fingers by tools and sharp edges.

Ergonomics - The science of relating people, their work, and their physical work environment in such a way as to optimize their work procedures, practices and efficiency while maintaining their health and well-being.

Extreme Temperatures - Cold air temperatures (55°F and lower) may cause loss of dexterity proportional to exposure time.

Force - Physical exertion or pressure applied to any part of the body while working, such as lifting, pushing, pulling, gripping or pinching equipment or tools.

Individual Susceptibility - Individuals may be predisposed to MSD based on their heredity, prior injuries, other illnesses, medication, smoking, etc.

Musculoskeletal Disorders (MSD) - Injuries and disorders of the muscles, nerves, tendons, ligaments, joints, cartilage and spinal disc; examples include carpal tunnel syndrome, rotator cuff tendonitis, and tension neck syndrome.

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Neutral Body Positioning - A comfortable working posture in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing a musculoskeletal disorder.

Repetition - Performing the same motion over and over again.

Workstation - Any work area where personnel works or may work during the course of normal workday activities.

5. Authority and Responsibilities

In addition to the roles and responsibilities outlined in the UAA Training Program, the following apply to the Ergonomic and Back Safety Program.

EHS/RM

- Work with departments as the primary resource for ergonomic guidance and related best work practices.
- Conduct, or recommend resources for, ergonomic evaluations for personnel upon request.
- Provide recommendations, as requested or deemed necessary to applicable UAA departments regarding tool, furniture, and equipment selection.
- Assist departments to locate appropriate ergonomic information and resources upon request.

Supervisor

- Ensure departments are assessed for ergonomic risks and mitigate where feasible.
- Permit personnel working in the department the opportunity to participate in ergonomic evaluations when requested.
- Assist in the determination of better ergonomic procedures or equipment to be used when ergonomic hazards are identified.
- Ensure personnel are properly trained in this ergonomic safety program and the proper use of equipment in their work areas.

Department Safety Coordinator

- Assist in the determination of tasks or workstations that may require ergonomic assessment.
- Conduct periodic inspections of the workplace to ensure ergonomic programs are being followed.
- Assist in the determination of safe methods to mitigate ergonomic hazards.

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Employees/Student Workers

- Visually inspect work area to identify ergonomic hazards and mitigate when possible.
- Alert department supervisor or ergonomic hazards.
- Utilize safe lifting techniques and seeking assistance when needed.

Outside Contractors

- Perform all work in compliance with their company's ergonomic safety program, which will be reviewed and approved by the EHS/RM department.
- If the company does not have a program, they must comply with this program.

6. Hazards Associated with Ergonomics

Ergonomic hazards are factors in your environment that can cause MSDs which affect the muscles, nerves, blood vessels, ligaments and tendons. MSDs are caused by strain placed on the body from ergonomic hazards that aren't always immediately obvious, making these hazards difficult to detect. Personnel in many different departments and occupations can be exposed to risk factors at work, such as lifting heavy items, bending, reaching overhead, pushing and pulling heavy loads, working in awkward body postures and performing the same or similar tasks repetitively. Examples of common MSDs include:

- Carpal tunnel syndrome
- Tendinitis
- Rotator cuff injuries
- Epicondylitis
- Trigger finger
- Muscle strains
- Lower back injures

7. Engineering Controls

Engineering controls are design plans or changes to the working environment to prevent or reduce personnel exposure to potential ergonomic hazards. The following example of engineering controls should be considered in area design to reduce the risk of ergonomic hazards.

- Design and installation of workstations that allow personnel to work in neutral positions
- Purchase workstations that allow adjustment for different personnel
- Use of devices to assist in lifting and moving heavy objects

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- Provide personnel with the correct tools to perform tasks without body strain

8. Administrative Controls

Administrative controls are safe work practices and procedures designed to reduce the risks associated with ergonomics. Examples of administrative controls include the following:

- Train personnel to identify ergonomic risks and mitigate in the workplace
- Perform routine inspections of workstations to identify ergonomic risks
- Provide personnel adequate breaks or work rotation while performing repetitive tasks
- Provide proper maintenance of tools and equipment

9. Procedures

The following procedures will be followed to mitigate ergonomic hazards.

Ergonomics is the study of the relationship between people, their work tasks, and their physical work environment. The major goal of ergonomics is to find feasible ways to fit the job and the individual and promote healthy work practices. This is accomplished through a combination of workplace training, evaluation of workstations and work practices, and the implementation of ergonomic control strategies. UAA personnel should always work to identify ergonomic hazards and then determine the proper techniques to minimize the hazard to accomplish a task. Through education and training, or by designing and arranging work environments in a manner that allows individuals to effectively function, potential injuries and disorders may be reduced, prevented or eliminated. UAA EHS/RM department may be contacted for assistance in evaluating the work area and provide recommendations for improvement.

Common risk factors

The most common risk factors that universally contribute to MSDs that UAA personnel should work to identify and mitigate in the workplace are as follows:

- Repetition
- Awkward Body Posture
- Force
- Contact Stress
- Extreme Temperatures
- Individual Susceptibility

More detailed guidance on the hazards and mitigation of these hazards for common workplaces

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found at UAA are found in the corresponding Appendices to the Ergonomics and Back Safety Program

- Computer Work Stations Ergonomic Guide: Appendix A
- Lifting/Back Safety: Appendix B
- Laboratory Ergonomic Safety: Appendix C
- Health Care Ergonomics: Appendix: D

Ergonomic Evaluation

After working to mitigate ergonomic hazards in the work area, more assistance is required, contact EHS/RM for a more detailed area or task ergonomic assessment. EHS/RM will assist with an assessment or provide referrals to a qualified professional to perform the assessment and provide the department with recommendations for hazard mitigation.

Ergonomic Office Equipment

There are many products available which can be used improve workplace conditions and mitigate ergonomic hazards. Departments may purchase equipment for personnel if feasible. EHS/RM can provide recommendations upon request.

Ergonomic Injury/Illness Reporting

UAA personnel shall report signs and symptoms of ergonomic-related injuries/illnesses immediately to their supervisor and if warranted the injury/illness should also be reported using the UAA Online Incident Reporting tool located on the EHS/RM website. Depending on the severity, frequency and risk, the EHS/RM may request a formal incident investigation, and a more detailed area ergonomic assessment.

Computer Work Stations

Personnel should work to maintain their body in neutral body positions while setting up and working at their computer workstations. Appendix A provides the Occupational Safety and Health Administration (OSHA) guidance on setting up proper workstations, to best maintain neutral body positions.

Other environmental considerations when setting up a work station include the following:

- Ensure work stations have proper lighting
- Position furniture to minimize glare from lights and windows
- Ensure there is proper ventilation at the work station

Maintaining postures or performing highly repetitive tasks for extended periods at a

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workstation can lead to problems in localized areas of the body. For example, using a mouse for a few minutes is typically not a problem for most users, but performing this task for several uninterrupted hours can expose the small muscles and tendons of the hand to hundreds or even thousands of activations (repetitions). There may not be adequate time between activations for rest and recuperation, which can lead to localized fatigue, wear and tear, and injury. Likewise, maintaining static postures, such as viewing the monitor, for a prolonged period of time without taking a break can fatigue the muscles of the neck and shoulder that support the head.

UAA personnel who work several hours at a computer workstation should ensure the following are part of the work day:

- Ensure variation in tasks and/or workstations to alternate muscle groups being used
- Take short breaks periodically to move around and stretch
- Mix non-computer tasks into the schedule

UAA encourages all personnel to evaluate their workstation using the guide provided in Appendix E, however if more assistance is required they should contact EHS/RM for further assistance.

10. Inspections

UAA Department Supervisors and personnel are required to periodically inspect their work area and practices to identify ergonomic hazards

UAA EHS/RM can provide workplace evaluations upon request

11. Training

UAA shall provide a training program for personnel as necessary.

The program shall enable personnel to recognize hazards related to ergonomics and shall train personnel in the procedures to be followed to minimize these hazards.

The employer shall ensure that personnel have been trained by a competent person in the following areas, as applicable:

- Factors related to workstations and job tasks that may increase discomfort or risk of injury
- Signs and symptoms of MSDs
- How to correctly use and adjust workstations, tools and equipment
- Proper lifting techniques
- Laboratory Ergonomic Hazards and prevention for laboratory workers

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12. Program Evaluation

The Ergonomic and Back Safety program shall be evaluated on an annual basis utilizing the protocols set forth by EHS/RM. The evaluation team will consist of a department safety coordinator and a designee from EHS/RM. EHS/RM will define the scope of the evaluation. The final report will be developed by the EHS/RM utilizing the information received during the evaluation. The deficiencies determined in the report will be documented and corrective action plans will be developed.

13. References

Resources that apply to ergonomic safety are included below.

- OSHA Computer Workstations e-Tool
- OSHA Fact Sheet “Laboratory Safety Ergonomics for the Prevention of Musculoskeletal Disorders”
- OSHA’s Guidelines for Nursing Homes Ergonomics for the Prevention of Musculoskeletal Disorders

14. Revision History

Revision Number	Date Revised	Description of Change	Revised By	Approved By
0		Initial Issue		
1				
2				
3				

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Appendix A

Computer Work Stations Ergonomic Guide

Personnel should work to maintain their body in neutral body positions while setting up and working at their computer workstations. UAA Personnel should use the OSHA guidance below for assistance on setting up and evaluating proper workstations and to best maintain neutral body positions.

Other environmental considerations when setting up a work station include the following:

- Proper lighting
- Minimize glare from lights and windows
- Proper ventilation

Maintaining postures or performing highly repetitive tasks for extended periods at a workstation can lead to problems in localized areas of the body. For example, using a mouse for a few minutes is typically not a problem for most users, but performing this task for several uninterrupted hours can expose the small muscles and tendons of the hand to hundreds or even thousands of activations (repetitions). There may not be adequate time between activations for rest and recuperation, which can lead to localized fatigue, wear and tear, and injury. Likewise, maintaining static postures, such as viewing the monitor, for a prolonged period of time without taking a break can fatigue the muscles of the neck and shoulder that support the head.

UAA personnel who work several hours at a computer workstation should ensure the following are part of the work day:

- Variation in tasks and/or workstations to alternate muscle groups being used
- Periodically take short breaks to move around and stretch
- Mix non-computer tasks into the schedule

UAA encourages all personnel to evaluate their workstation using the guide provided below, however, if more assistance is required they should contact EHS/RM for further assistance.

OSHA Guidance on Computer Workstation Good Working Positions

Good Working Positions

To understand the best way to set up a computer workstation, it is helpful to understand the concept of neutral body positioning. This is a comfortable working posture in which your joints are naturally aligned. Working with the body in a neutral position reduces stress and strain on the muscles, tendons, and skeletal system and reduces your risk of developing MSD. The following are important considerations when attempting to maintain neutral body postures

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while working at the computer workstation:

- Hands, wrists, and forearms are straight, in-line and roughly parallel to the floor.
- Head is level, forward facing, and balanced. Generally, it is in-line with the torso.
- Shoulders are relaxed, and upper arms hang normally at the side of the body.
- Elbows stay in close to the body and are bent between 90 and 120 degrees.
- Feet are fully supported by the floor or a footrest may be used if the desk height is not adjustable.
- Back is fully supported with appropriate lumbar support when sitting vertical or leaning back slightly.
- Thighs and hips are supported and generally parallel to the floor.
- Knees are about the same height as the hips with the feet slightly forward

Regardless of how good your working posture is, working in the same posture or sitting still for prolonged periods is not healthy. You should change your working position frequently throughout the day in the following ways:

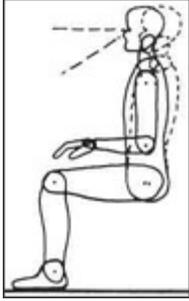
- Make small adjustments to your chair or backrest.
- Stretch your fingers, hands, arms, and torso.
- Stand up and walk around for a few minutes periodically.
- Perform some of your tasks in standing: computing, reading, phone, meetings.

These four reference postures are examples of body posture changes that all provide neutral positioning for the body.

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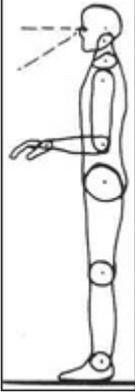
Upright Sitting

Upright sitting posture. The user's torso and neck are approximately vertical and in-line, the thighs are approximately horizontal, and the lower legs are vertical.

	
<p><i>Figure 1. Upright sitting posture</i></p>	<p><i>Figure 2. The user's torso and neck are approximately vertical and in-line, the thighs are approximately horizontal, and the lower legs are vertical.</i></p>

Standing

Standing posture. The user's legs, torso, neck, and head are approximately in-line and vertical with feet slightly apart. The user may also elevate one foot on a rest while in this posture.

	
<p>Figure 3. Standing posture</p>	<p>Figure 4. The user's legs, torso, neck, and head are approximately in-line and vertical with feet slightly apart.</p>

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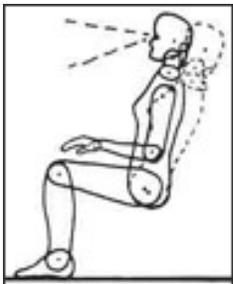
Declined Sitting

Declined sitting posture. The user's thighs are inclined with the buttocks higher than the knee and the angle between the thighs and the torso is greater than 90 degrees. The torso is vertical or slightly reclined and the legs are vertical. This position should not inhibit the ability to easily reach the keyboard or view the monitor.

	
<p>Figure 5. Declined sitting position</p>	<p>Figure 6. The user's thighs are inclined with the buttocks higher than the knee and the angle between the thighs and the torso is greater than 90 degrees. The torso is vertical or slightly reclined and the legs are vertical.</p>

Reclined Sitting

Reclined sitting posture. The user's torso and neck are straight and recline between 105 and 120 degrees from the thighs.

	
<p>Figure 7. Reclined sitting posture</p>	<p>Figure 8. The user's torso and neck are straight and recline between 105 and 120 degrees from</p>

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Appendix B

Lifting/Back Safety

Back injuries account for approximately 20% of injuries in the workplace, and a majority of back injuries occur while lifting. UAA personnel must take the following precautions while lifting objects to reduce the chance for injuries:

General safe lifting practices

- Wear supportive shoes
- Use a tool such as a dolly, lift table, cart or forklift to lift and transfer objects
- Push and pull objects rather than lift and lower
- Break the load into several loads to reduce weight and size
- Seek help from others and practice. team lifting
- When possible, store materials that need to manually be lifted and transported on shelves or racks at a height about mid-thigh to mid-chest
- Utilize proper handholds, including handles, slots, or holes

Mechanical aids

Special lifting equipment such as hand trucks, carts, dollies, forklifts, hoists and wheelbarrows should be utilized to move loads when they are too heavy, awkward or a coworker is not available. Although mechanical aids are used, safe lifting procedures should still be followed by maintaining the natural curvature of the back, using the legs for any lifting that is encountered and avoid twisting the back

Proper Lifting Technique

UAA recommends using the following procedure when lifting to reduce the chance of injury.

- Before personnel lift a heavy object, they should ensure they plan the task. Determine the route of travel and where the object will be placed.
- When lifting an object from the floor, stand as close to the object as possible. Then kneel, resting one knee on the floor.
- Don't lift from a standing position with your waist bent or your knees locked
- With one knee resting on the floor, tighten your core muscles, including the muscles in your abdomen, back and pelvis and lift the object between your leg

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- Maintain the natural curve in your lower back, and don't hold your breath
- Be careful to hold the object close to your body. Rest the object on your knee as you prepare to stand
- As you stand, maintain the natural curve in your lower back and keep your core muscles tight
- Use your leg muscles, not your back, to lift the object
- As another option, squat rather than kneel to lift an object from the floor. Stand as close to the object as possible, positioning it between your knees as you squat
- Keep your feet parallel or stagger one foot ahead of the other. It might help to tilt one edge of the box up to ensure a firm hold
- As you stand, be careful to hold the object close to your body
- When you're standing and ready to move, continue holding the object close to your body to decrease the strain on your lower back. Keep your core muscles tight.
- Turn by pivoting your feet, not your back
- When lowering the load bend the knees and slowly lower the load to the surface while maintaining the natural curve of the back

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Appendix C

Laboratory Ergonomic Safety

In addition to ergonomic risks while working at a computer work stations, laboratory personnel are at risk due to some highly repetitive tasks commonly performed in the lab. UAA personnel working in laboratories should be aware of the following:

Body Posture

Poor posture while working at benches and hoods can cause misalignment of the spine resulting in MSDs. To improve alignment the following should be considered:

- Alternate between standing and sitting while working in the lab
- If using a high sitting chair, ensure there is a foot rest, so feet do not dangle
- Tilt the seat forward or use a wedge when working in a forward posture
- Wear supportive shoes or use cushioned mats if standing for long periods is required
- Keep frequently used supplies and equipment within close reach

Pipetting

When pipetting for long periods laboratory personnel should do the following:

- Elevate chair to avoid reaching up to pipette
- Do not twist or rotate wrists
- Periodically alternate hands used to pipette
- Hold pipette with loose grip
- Use electronic or light touch pipettes if available
- Use minimal pressure while pipetting.
- Use a light amount of force or two hands to change tips
- Use low profile tubes, solution containers and waste receptacles
- Select a lightweight pipette, properly sized for their hand
- Use pipettes with finger aspirators and thumb dispensers to reduce thumb strain
- Take a 1-2-minute break every 20 minutes

Microscope Use

Lab personnel who work at microscopes for prolonged periods of time must consider the

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following:

- Sit close to the work surface
- Avoid leaning on hard edges
- Pad forearms and edges
- Keep elbows close to their sides
- Adjust chair, workbench, or microscope as needed to maintain an upright head position
- Elevate, tilt or move the microscope close to the edge of the counter to avoid bending their neck
- Use adjustable eyepieces or mount your microscope on a 30° angle stand for easier viewing
- Keep scopes repaired and clean
- Spread microscope work throughout the day and share it with several people
- Take short breaks. Every 15 minutes close the eyes or focus on something in the distance
- Every 30-60 minutes get up to stretch and move

Hood and Biosafety Cabinet Use

When UAA lab personnel are using hoods, they will consider the following to reduce ergonomic hazards:

- Remove unnecessary supplies from the work area
- Perform all work 6 inches inside the hood
- Position work supplies in their order of use, with those most frequently used near the front of the hood, but not closer than 6 inches from the face of the hood
- Place equipment on approved elevated turntables for easy retrieval
- Use diffused lighting to limit glare
- Take short breaks to stretch muscles and relieve forearm and wrist pressure
- Adjust chair/stool to a height that allows the shoulders to relax

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Appendix D

Health Care Ergonomics

Health care environments introduce additional ergonomic hazards for injuries or repetitive stress disorders. Major ergonomic issues in the hospital settings include patient handling and awkward postures. The following provides guidance for UAA personnel working in health care environments.

Patient Handling

Many health care personnel are exposed to injuries such as muscle and ligament strain and tears, joint and tendon inflammation, pinched nerves, herniated discs and other injuries from ergonomic stressors during handling, transferring, and repositioning of patients.

OSHA recommends minimizing the manual lifting of patients in all cases and eliminating lifting when possible. UAA recommends that personnel make use of proper assist devices and equipment whenever possible. The following devices are examples of engineering controls that should be used whenever feasible

- Mechanical lift equipment
- Shower chairs
- Lateral transfer devices
- Sliding boards
- Gait belts with handles
- Wheelchairs
- Repositioning devices

Administrative controls, such as proper lifting training and development of written patient care plans should be created and implemented to make the best use of personnel time and abilities. Sufficient staff should be on hand to make tasks requiring multiple people (such as some patient repositioning and transfers) feasible.

There are many resources available for reference for the identification and mitigation of ergonomic hazards and guidance on proper procedures in health care environments.

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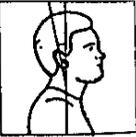
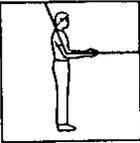
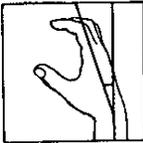
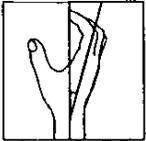
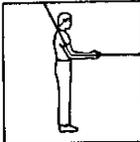
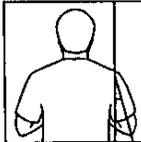
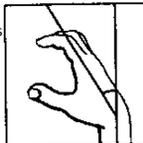
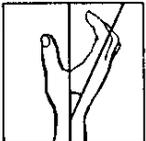
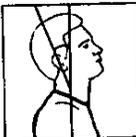
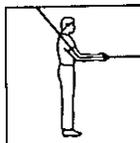
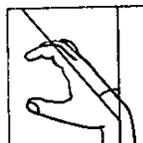
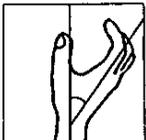
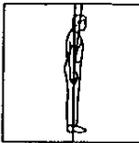
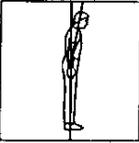
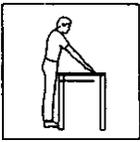
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Ergonomic Assessment Checklist

UAA Ergonomic Assessment Checklist			
Date	Activity Assessed	Department	
Department Supervisor	Personnel Observed		
	Building /Location	Room/Area	
Ergonomic Assessment Checklist			
Risk Factors If the answer is yes to any of these items provide explanation on page 2.		Yes	No
1. Have any shop workers been previously diagnosed with any of the following CTD's: Carpal tunnel, Tendonitis, Tenosynovitis, De Quervain's disease, Trigger Finger, White finger, Hand Arm Segmental Vibration Syndrome, Muscle strains, or Back ailments?			
2. Have there been any worker complaints concerning ergonomic issues?			
3. Do Personnel perform high repetition tasks? (100 reps/hour to 2000 per/day)			
4. Do the employee's routine tasks require repeated heavy lifting? (>20 lbs.) or occasional heavy lifting (>50 lbs.)			
5. Are employees using awkwardly designed tools, which cause the worker to operate the tool outside of a neutral position for an extended period of time? (> 1 hour)			
6. Do employees perform tasks with an awkward head or neck position for an extended period of time? (1 to 3 hours)			
7. Do employees perform tasks that require awkward back angles to be held for extended periods of time (2 to 3 hours)? i.e....hunching, bending, or squatting			
8. Do employees perform tasks with an awkward elbow angle for an extended period of time (1 to 3 hours) or with extreme force application?			
9. Do employees perform tasks with an awkward elbow abduction angle for an extended period of time (1 to 3 hours) or with extreme force application?			
10. Do employees perform tasks with an awkward wrist flexion angle for an extended period of time (1 to 3 hours) or with extreme force application?			
11. Do employees perform tasks with an awkward wrist extension angle for an extended period of time (1 to 3 hours) or with extreme force application?			
12. Do employees perform tasks with an awkward back/hip flexion angle for an extended period of time (1 to 3 hours) or with extreme force application?			
13. Do employees perform tasks with an extreme reaching distance for an extended period of time (1 to 3 hours) or with extreme force application?			
14. Do employees perform tasks with an odd work station height (either standing or sitting) for an extended period of time (1-3 hours) or with extreme force application?			
15. Are high impact tools used routinely? i.e., riveters, bucking bars, or impact wrenches			
16. Are high vibration producing tools used routinely? i.e., die grinders, sanders, weed eaters			
17. Do employees perform tasks at an extreme height (high or low) for an extended period of time (1 to 3 hours) or with extreme force application?			
18. Are there any other areas of concern either from your observations or employee complaints?			

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Risk Factor Guide

work		Optimal work position		Optimal work position		Optimal work position		Optimal work Position	
stress		Moderate Stress 105° to 120°		Moderate stress 10° to 20°		Moderate stress 15° to 30°		Moderate stress 20° to 35°	
stress		Severe Stress 120° to 135°		Severe Stress 20° to 30°		Severe Stress 30° to 40°		Severe stress 35° to 45°	
Hip/Lower Back Flexion		Optimal work position 0° to 5°	Reaching		Optimal work position Male: 10" to 15"	Task Height		Workstation Height	
		Moderate stress 5° to 10°			Moderate stress Male 15" to 20"				
		Severe stress 10° to 15°			Severe stress Male: 20" to 25"				
							Optimal work position Male: 36" to 39"	Optimal work position PRECISION WORK	
							Moderate stress Male: 39" to 41"	Optimal work position SMALL, LIGHT WORK	
							Severe Stress Male: 41" to 43"	Male: 36" to 38"	
								Optimal work position LARGE, HEAVY WORK	
								Male: 30" to 36"	