A successful Ergonomics Program involves every member of an organization. It starts with management commitment and succeeds with active employee involvement and acceptance for constructive change.

**Program Overview**
The following is a brief overview of the components of an Ergonomics Program and implementation process.

**Step 1: Management Leadership**  
The leadership and commitment by management is to provide the resources and support needed to create a safe and efficient work environment through an Ergonomics Program.

**Step 2: Written Ergonomics Policy**  
Your written policy is a communication tool to inform employees of the company’s goal and the employee’s responsibilities in the Ergonomics Program. Your legal counsel should review your policy.

**Step 3: Involving Employees**  
Active employee involvement through committees/teams increases success and the acceptance of change by employees.

**Step 4: Employee Training and Education**  
Training gives workers and management an understanding of the potential musculoskeletal disorder (MSD) hazards, their causes and symptoms. It provides tools and methods to prevent these injuries.

**Step 5: Records and Work-site Review**  
Review company injuries and data to identify jobs that may contain MSD risk factors and prioritize which jobs/tasks will be addressed first. An Ergonomics Walkthrough Worksheet will assist with and document your work-site review.

**Step 6: Ergonomics Job/Task Analysis**  
Once a job/task has been identified as having risk factors or an MSD injury problem, a more thorough review is needed. An ergonomics job/task analysis involves breaking down the job/tasks, identifying ergonomic risk factors and taking action to implement the appropriate controls. Great American can provide sample processes, tools, formulas and check sheets that you might adapt to your specific needs.

**Step 7: Workstation Layout/Design**  
Proper layout and design of workstations will improve ergonomic conditions for standing and seated work. Proper positioning and labeling of displays and controls complement ergonomic workstation design.

**Step 8: Medical Management**  
Medical management involves the effective use of medical health care providers to prevent and manage work-related MSD. Encourage employees to report any signs and symptoms of MSD immediately so that with early intervention, most may be treated with only first aid. A delay in reporting increases the cost of medical treatment and an employee’s pain/suffering. Delays may increase the severity of the injury.

**Step 9: Ergonomics Program Evaluation**  
Your Ergonomics Program is a continuing process requiring periodic evaluation (at least annually) and adjustment to maximize the desired results.
Step 1: Management Leadership

It is important that all employees know what musculoskeletal disorders (MSD's) are, their signs and symptoms, and the importance of reporting them early. This information should be provided to all employees either in writing or electronically, if accessible. New employees should receive this information at orientation.

Employees should understand how to report signs and symptoms, ergonomic risk factors and the tasks associated with ergonomic hazards. Employees should also be provided a summary of any applicable Federal or State standards.

To achieve success with the Ergonomics Program, management must show its commitment and support by ensuring that the following actions are taken:

• Assign and communicate responsibilities to associates for establishing and managing an ergonomics program.
• Allocate the appropriate resources and involve employees and the unions (if applicable) throughout the process. Additional resources may be needed to implement some of the suggestions, such as staff time, money, outside consultants, corporate support of administrative changes and training.
• Communicate management commitment through a written policy, employee participation in committees and teams, and accepting and implementing suggested changes to improve safety and efficiency in the workplace.
• Review the company’s policies to make certain they encourage (and don’t discourage) early reporting of MSD signs, symptoms and hazards.

Step 2: Written Ergonomics Policy

The company safety manual should include a section on Ergonomics that conveys:

• the Company’s goals of maintaining and preserving a safe and healthful environment for all;
• an expectation of full participation and cooperation from every employee, including early reporting of signs and symptoms;
• information describing the roles of designated persons, the ergonomics committee and teams;
• the high priority of ergonomics among other cost reduction, productivity and quality assurance activities;
• support from any local unions.

Great American has a sample policy for your review.

Step 3: Involving Employees

Companies have choices regarding how they implement an Ergonomics Program. Here are several options:

1. One person is assigned responsibility for safety, including ergonomics.
2. The current company Safety Committee addresses ergonomics.
3. A separate Ergonomics Committee handles only ergonomic issues.
4. Area teams are established to address the needs of their departments. These teams typically have a representative report back to an Ergonomics Committee.
Step 3: Involving Employees (continued)

How you address ergonomics often depends on the company size, complexity and the scope of safety and ergonomic concerns unique to your situation. The structure is not important. What matters is a commitment to ergonomic improvements, a willingness to dedicate time to the program and the authority to make decisions involving money and allocation of resources.

An effective ergonomics program is an ongoing process that requires involvement and support by everyone in the Company. Employee training and education should be a priority.

Committees

The Ergonomics Committee is similar to a Safety Committee. In fact, your Ergonomics Committee can be a function of an existing Safety Committee. Regardless of which type of committee is created, the process works the same way. Employees form different functional areas and work together to coordinate and implement the Program. Representation typically varies by the size of the company. Allowing employees to select their own representatives often promotes involvement. Committee members typically include:

- Worker Representation
- All Major Departments
- Management/Supervision
- Maintenance
- Safety and Health Personnel
- Purchasing
- Engineers
- Human Resources Personnel
- Health Care Provider
- Ergonomic Specialist or Consultant
- Union Representative

Note: All functional areas listed do not necessarily need to be represented to have a successful program.

The management representative should have authority to make decisions and authorize expenditures. Whenever possible, a budget should be established for ergonomics improvements. The Committee can only recommend changes. The decision to adopt the changes or implement policy or allocate funding is the responsibility of management.

The Committee should invite the company’s primary medical provider to participate in some of the meetings. The health care provider would routinely interact with employees and exchange information to prevent and properly treat MSD.

Teams

Larger companies or companies with numerous or complex ergonomic concerns should consider forming area teams. This allows tasks to be dispersed to additional employees across the company to increase involvement and improve the timeliness of implementation. If area teams exist, a member of the Ergonomics Committee typically facilitates or is a member.

Teams that succeed are:
1. Trained in team building and ergonomics. Great American can provide assistance with training through loan of audio/video training materials and on site trainers.
2. Kept small and include production workers engaged in the jobs under study, area supervisors, maintenance and engineering staff who could affect proposed job improvements.
3. Sharing information (i.e., injury and production data) among members, along with reports of team objectives, progress, and accomplishments throughout the company.

Step 4: Records Review

The overall goals of the Records Review are:
1. Help employees understand and control work-related disorders (MSD).
2. Communicate the risk of developing MSD.
3. Enable employees to report MSD.
4. Provide tools and methods to reduce MSD risk.
5. Develop methods to prevent MSD.
6. Evaluate your ergonomics program.

Employees must report any MSD to the company’s primary medical provider.

Because employees are not the only users of MSD records, whether the company is large or small, three basic areas to focus on are:

A. Awareness/Guidance
   - Review the significance of MSD.
   - Review MSD reports.
   - Teach employees about MSD risks.
   - Explain MSD risks.
   - Review the company’s MSD reporting.
   - Demonstrate a MSD risk assessment.
   - Encourage employees to report MSD.
   - Post information.

B. Work-site and/or Job Specific
   - Explain the relevance of MSD.
   - Demonstrate an MSD incident.
   - Recommend ways to reduce MSD.
   - Based on a Review.

C. Teams and/or Job Specific
   - Develop skills.
   - Build skills for future MSD.

The goal of Records Review is to identify and address MSD to impact these jobs/sites (injury, costs, etc.), and prioritize the importance of records review, which is the mainstay of the program.

Step 5: Records Review

The first step in conducting Records Review is:

Records Review
Step 4: Training and Education

The overall goals of ergonomics training are to:
1. Help employees, supervisors, and managers identify the signs and symptoms of musculoskeletal disorders (MSD),
2. Communicate the importance of early reporting,
3. Enable employees, supervisors, and managers to identify aspects of their jobs that have increased risk of developing a MSD,
4. Provide tools and knowledge needed to evaluate and identify MSD risk factors,
5. Develop methods used to control MSD, and
6. Evaluate your ergonomics program.

Employees will not be expected to diagnose or treat MSD after this training. Your designated health care provider is responsible for the diagnosis and treatment of MSD.

Because employees have different levels of participation in your company’s ergonomics program (based on whether the company has a committee and/or teams), different levels of training may be necessary. Here are three basic areas to consider:

A. Awareness/General Training
   • Review the signs and symptoms of MSD.
   • Review MSD reporting procedures (who-what-where-when).
   • Teach employees to recognize risk factors in their jobs and home.
   • Explain the procedures for reporting risk factors and MSD.
   • Review the company’s health care procedures and health care provider (such as the reporting of symptoms and injuries).
   • Demonstrate accepted ergonomics practices.
   • Encourage employees to discuss possible ergonomic problems associated with their jobs/tasks.
   • Post information for general ergonomics awareness where it is accessible by all employees.

B. Work-site and Ergonomic Job/Task Analysis
   • Explain the Records & Work-site Review process described in Step 5, below.
   • Demonstrate an ergonomics job/task analysis described in Step 6, below.
   • Recommend ways to control ergonomics and material handling hazards/exposures based on a Records & Work-site Review or a task analysis.

C. Teams and/or Committees
   • Develop skills in team building, consensus development, and problem solving.
   • Build skills for idea development and for open discussions to reach an agreement.

Step 5: Records & Worksite Review

The goal of Records & Work-site Review is to identify MSD problem jobs/tasks in your company, estimate the impact these jobs/tasks have on the company (in terms of employee exposure, product quality, claims, overall costs, etc.), and prioritize which jobs/tasks are to addressed first. This is done through a three step process of records review, work-site evaluation, and employee interviews.

Records Review
The first step in conducting the Records & Work-site Review is to analyze available data, which may include OSHA logs, workers’ compensation experience, personnel issues, and quality control data.
OSHA and workers’ compensation data

This record review allows you to identify jobs/tasks or departments that have incurred MSD illnesses or injuries. It may be practical to review the last two years of data. Data should be ranked by highest frequency (number of MSD injuries or claims) and severity (overall cost) rate. More than one MSD case for the same task/job within two years is considered a trend.

Questions to consider:
- Have you had more claims since introducing a particular process, machine or equipment?
- What kinds of MSD illnesses or injuries have been occurring?
- How many employees have had MSD based on frequency for a task, job or in a department?
- Should this have a high priority ranking for correction?
- How many employees may be exposed to MSD for a specific task, job or in a department?
- Is there a type of MSD incident whose severity ranks it first for correction?

Personnel data

When reviewing personnel data, look for high turnover jobs, undesirable entry jobs or jobs that are generally disliked. These jobs may be prime targets for ergonomic improvements. They often do not show on the OSHA logs because people tend not to stay in them long enough for MSD to occur. It is often helpful to discuss these jobs with employees and supervisors. Ergonomic improvements tend to be less expensive than the cost of employee turnover.

Quality control data

Human error can often result in quality problems. By looking at quality and production reports, look for higher than average or simply unacceptable reject or productivity rates. When employees are forced to perform jobs in uncomfortable or stressful manners, quality problems or decreased productivity typically result.

Worksite Evaluation

The worksite evaluation is a walkthrough survey. You should observe employees while they are at work. Look for ergonomic triggers or poor ergonomic work methods, such as awkward postures, employees wincing when performing a task/job, or makeshift changes, such as masking tape on corners/equipment or boxes for footrests/work platform.

The goal of this walkthrough survey is to identify ergonomics problem areas that could benefit from a more thorough evaluation. As you identify risk factors, prioritize them to guide your corrective actions. Write any idea down for future use. All possible solutions should be included at this point in your evaluation. A standard worksheet is suggested so that you have a uniform and consistent survey. You may develop your own or use one that Great American has developed. (See ERGONOMICS WALKTHROUGH WORKSHEET.)

Employee Symptoms Survey-Early Intervention

Some companies conduct a Symptoms Survey as a standardized method of gathering data from employees. While useful information can be collected with this kind of survey, be prepared. When employees are asked to indicate body parts that feel fatigue, discomfort or pain, minor complaints will result. Also, seek out information pertaining to leisure activities that may be creating or causing an employee discomfort or pain. Companies should evaluate workstations and practices for each employee reporting symptoms and be prepared to address any real problems that are revealed.

You may consider contacting your health care provider to complete a symptoms survey. Independent surveys conducted by medical personnel may produce better results than those conducted by company personnel. You may develop your own or use one that Great American Insurance has developed. (See ERGONOMICS SYMPTOMS SURVEY-EARLY INTERVENTION WORKSHEET.)

Data Integration

Data integration is the process of bringing together the information learned during the records review, worksite evaluations and employee survey. Using all of this data, the safety committee/team should determine which jobs need a thorough ergonomics task analysis first. When prioritizing jobs, consider beginning with smaller jobs that can lead to early success. If the initial project is too big or complicated, the employees may become overwhelmed and frustrated. Keep goals realistic and well defined. Frequently verify progress.
Task analysis breaks a job into its individual tasks, identifies and measures risk factors associated with each task, and identifies conditions contributing to the risk factors that may cause MSD. A task analysis lays the groundwork for developing ways to eliminate or reduce the ergonomics risk factors.

Most jobs can be broken down in terms of:
1. The tools, equipment, and materials used to perform the job;
2. The workstation layout and physical environment; and
3. The individual task demands and organizational climate in which the work is performed.

Many companies use checklists, formulas, photography, and/or videotaping when performing a task analysis. Procedures for collecting information during an ergonomics task analysis include:

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Evaluation for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observe the workers performing the tasks to determine the amount of time spent on the task and the actual job/tasks performed. Videotaping is commonly done.</td>
<td>In general, you can use this method to identify most, if not all risk factors. However, it is especially beneficial in identifying repetition, static loading, and fatigue.</td>
</tr>
<tr>
<td>Photograph work postures, workstation layouts, tools, etc. to illustrate a job.</td>
<td>Posture, easy reach, proper height, and lack of adjustability.</td>
</tr>
<tr>
<td>Measure workstation (i.e., heights, reach distance for tools or stock, lighting, clearance access).</td>
<td>Easy reach, proper height, lack of adjustability, direct pressure, and environment.</td>
</tr>
<tr>
<td>Measure hand tool sizes and dimensions, weighing tools and parts, and tool vibration.</td>
<td>Vibration and force.</td>
</tr>
<tr>
<td>Determine characteristics of work surfaces, such as hardness, slip resistance, and sharp edges.</td>
<td>Pressure and environment.</td>
</tr>
<tr>
<td>Measure exposure to cold, heat, and whole body vibration.</td>
<td>Vibration and environment.</td>
</tr>
<tr>
<td>Calculate bio-mechanical force, such as the muscle force required to accomplish a task or pressure put on the back based on the weight of the load, whether it is pushed or pulled, etc.</td>
<td>Force and material handling.</td>
</tr>
</tbody>
</table>

Controls

Once the task analysis is complete and you have identified the factors and conditions contributing to MSD, controls should be put in place to minimize or eliminate MSD exposure. There is a three-tier hierarchy of controls that is widely accepted for modifying ergonomic hazards: 1) engineering controls, 2) administrative controls, and 3) use of personal protective equipment.

**Engineering Controls**

This is the preferred control method because it typically eliminates the MSD exposure or removes the person from the exposure. Engineering controls involve changing the workstation layout, selection and use of tools, position of process materials, or work methods used to complete a task. Examples include (not all-inclusive):

- Automate the task to eliminate the need for it to be done manually.
- Use mechanical assist devices to eliminate heavy lifting, carrying, pushing and/or pulling to reduce the force.
- Add handles or hand holds to aid in materials handling and reduce hand/arm force required.
- Provide adjustable chairs, workbenches, tilting material bins, scissors pallet leveling devices, etc. to allow employees to work at the proper height.
- Locate tools and materials within short reaches and eliminate sharp bends or corners.
• Change the process or tools to reduce/eliminate force, direct pressure, vibration, repetition, and improve posture.
• Suspend tools to reduce weight of tool, static loading, and worker fatigue, and to allow easier access to work area.
• Use fixtures/jigs to hold pieces to relieve the need for awkward hand and arm position and/or excessive grip pressure.
• Pad or round workstation edges to minimize sharp edges.
• Provide anti-fatigue mats, footrests or sit-lean seats to reduce static body position, fatigue, vibration, and to improve posture.
• Increase the lighting and eliminate glare to reduce eye fatigue and improve visibility.
• Reduce the weight or change the shape of objects to be handled or eliminate contact with cold metal parts.

Administrative Controls
Administrative controls are policies or practices directed by management that can reduce or prevent exposure to ergonomics risk factors. Some organizations combine work practices with administrative controls. Since administrative controls do not eliminate hazards but merely reduce the duration of exposure, management must ensure the practices are being followed. Daily management involvement is needed. Examples of administrative controls may include:

• Provide frequent (every 30 minutes) task/job rotation or longer rest (30 minutes) breaks to allow the body time to recover from fatigue.
• Limit the intensity and duration of mental and physical effort throughout the day.
• Rotate workers through several jobs with different physical demands (referred to as task/job expansion).
• Adjust the work pace to relieve repetitive motions and give the worker more control of the work process.
• Train workers in recognizing risk factors and methods to ease the task demands.
• Provide wellness programs to improve the overall health of the employees.
• Reduce shift length or curtail overtime to prevent fatigue.
• Utilize team lifting for heavy or awkward lifts.

Personal Protective Equipment
Equipment such as wrist guards, braces, splints, insoles, kneepads, or vibration attenuation gloves should only be prescribed by a physician. Although these devices may, in some situations, reduce the duration, frequency, or intensity of exposure, evidence of their effectiveness in injury reduction is inconclusive. Eliminating a hazard is preferable to using personal protective equipment.

Although engineering controls are preferred, administrative controls can be useful temporary measures until engineering controls can be implemented or when engineering controls are not feasible.
Risk Factors
Risk factors include:

Repetition

If motions are repeated frequently (e.g., a task cycle time of less than 30 seconds) and for prolonged periods (e.g., 8 hour shifts), fatigue and strain of muscle-tendons can accumulate.

Goal: Minimize the number of motions required for completing a task.

Engineering Controls
- Automate—let the machine do the work for you.
- Layout the workstation to eliminate unnecessary hand and arm motions and to improve efficiency.
- Improve tools used.
- Provide chairs or mats to reduce stress on legs and feet.

Administrative Controls
- Provide frequent or longer rest breaks.
- Rotate workers through several jobs with different physical demands.
- Adjust the work pace to relieve repetitive motions and give the worker more control of the work process.
- Vary the jobs individuals perform.
- Perform stretching exercises to relieve stress and limber muscles.
- Reduce shift length or curtail overtime.

Reach

Employees must reach for items, causing twisting, bending or strain. This makes work more difficult and less efficient and fatigues the body and muscles.

Goal: Keep everything in easy reach.

Engineering Controls
- Rearrange tools and equipment.
- Reduce work area size.
- Make cut-outs in the work surface.

Engineering Controls for reaching into bins
- Tilted bin or work surface.
- Spring loaded bins that raise the contents in the container as materials are removed.
- Stands with adjustable heights.
- Containers with removable sides.
Force

Tasks that require excessive force place greater stress on the muscles, tendons, ligaments, and joints causing fatigue and injury. Force is the amount of physical effort required to do a task or maintain control of the tools/equipment. Effort depends on the weight of the object, type of grip (pinch or full hand), object dimensions, type of activity, slipperiness of the object and duration of the task.

Goal: Reduce excessive force.

Engineering Controls
- Design/use tools that have power grips, rather than pinch grips.
- Increase size of grip (handle) by wrapping foam or similar product around the handle.
- Use two handed tools that distribute the force and increase control.
- Utilize power equipment in place of manual.

Administrative Controls
- Add handles or openings to materials that must be carried.
- Reduce pushing and pulling forces. It is easier to push than pull. Put handles on the item to be pushed.
- Use a mechanical assist device when possible.
- Keep wheels in good repair.
- Use large wheels with good bearings.

Vibration

Vibration occurs when transporting materials, forklift, stiff suspension.

Goal: Reduce/exclude vibration.

Engineering Controls
- Select power tools.
- Use handle coating.
- Properly maintain equipment.

Engineering Controls
- Make driving patterns.
- Use balancers, isolation (i.e., mount equipment) to reduce vibration.

Common Controls
- Change equipment.
- Perform routine maintenance.
- Use cushioned floor.
- Isolate vibration.

Administrative Controls
- Provide frequent breaks.
- Rotate workers that do not use power.
- Vary the jobs that reduce exposure.
- Reduce shift length.

Personal Protective Equipment
- Provide employees with vibration attenuation gloves.

Awkward Posture

Body posture dictates additional stress is work above the shoulder.

Goal: Maintain good natural curve, arm.

Engineering Controls
- Use inline tools close to reduce wrist or back strain.
- Provide arm support.
- Use a turntable or other supports to hold the work.
- Tilt work or other surface to reduce back strain from reaching or into bins.
Vibration

Vibration occurs when using power tools or standing or sitting in a vibrating environment or object, such as a forklift, stiff suspension vehicle or large machinery.

Goal: Reduce/eliminate hand/arm and whole body vibration.

Engineering Controls for hand/arm vibration
- Select power tools with anti-vibration properties.
- Use handle coatings that suppress vibrations.
- Properly maintain tools.

Engineering Controls for whole body vibration
- Make driving paths smooth.
- Use balancers, isolators, and damping materials to reduce vibration at the source or along the path (i.e., mount equipment on vibration dampening pads).

Common Controls
- Change equipment speeds and feeds.
- Perform routine maintenance.
- Use cushioned floor mats for standing operations.
- Isolate vibration.

Administrative Controls
- Provide frequent or longer rest breaks.
- Rotate workers through several jobs that do not use power equipment that causes vibration.
- Vary the jobs that individuals perform to reduce exposure to vibration.
- Reduce shift length or curtail overtime.

Personal Protective Equipment
- Provide employees with vibration attenuation gloves.

Awkward Posture/Positions

Body posture dictates which muscles and joints are used and the amount of force generated. For instance, additional stress is placed on the back when lifting while bending over at the waist. Frequent or prolonged work above the shoulder or below the waist can be particularly stressful.

Goal: Maintain good posture where wrists are straight with no deviation, back is maintained with natural curve, arms are kept below heart line with elbows close to the body.

Engineering Controls
- Use inline tools or pistol grips to reduce wrist deviations.
- Provide arm supports.
- Use a turntable with fixture to hold the work.
- Tilt work or otherwise change layout to reduce back strain from reaching behind or across body or into bins.
1. Tilt bin.
2. Use hydraulic tilters.
4. Remove sides for easy access.
5. Keep work materials close and work in front of the body.
   Work at proper elbow heights. Avoid neck flexion extending beyond 10 degrees.

Administrative Controls
- Change positions frequently.
- Provide frequent or longer rest breaks.
- Perform stretching exercises to relieve stress and limber muscles.

Static Loading/Fatigue

Static loading refers to staying in the same position for prolonged periods. Tasks that use the same muscles or motions for long duration (6 seconds or more at one time) and repetitively (more than 50% repetition) increase the likelihood of fatigue.

Goal: Static loading is minimized and there is an adequate work-recovery cycle.

Engineering Controls
- Use a turntable with fixture or jigs to hold the work.
- Add straps or handholds to the grip.
- Change the shape, contour, size, and/or covering of tool handles.
- Use anti-fatigue mats.
- Suspend tools to reduce weight.

Administrative Controls
- Use natural postures. Change postures frequently.
- Provide frequent or longer rest breaks.
- Rotate workers through several jobs with less static loading.
- Adjust the work pace to relieve repetitive motions.
- Vary the jobs individuals perform.
- Perform stretching exercises to relieve stress and limber muscles.
- Wear proper shoes.

Pressure/Contact

Problems arise when a tool is used repetitively or a task is performed on a particular surface. In addition to the task, a common problem is the use of a hammer (such as chipping, nailing or sawing) that results in increased pressure/force contact on the hand, wrist, or arm.

Goal: Eliminate/repeated impact.

Engineering Controls
- Palm Pressure:
  - Change the shape and/or covering of the tool to evenly distribute force.
  - Use pneumatic hammers.
- Arm Pressure:
  - To prevent forearm and hand fatigue:
    - Pad edges.
    - Round the edges.
    - Provide arm rests.
    - Redesign the task.
Height

Problems can arise when there is a mismatch between the height of the work and the employee.

**Goal:** Perform (sitting or standing) work at slightly above elbow height for precision work, just below elbow height for lighter work, and 4-6 inches below elbow height for heavy work.

**Engineering Controls**
- Arrange workstation so that tools and equipment are in easy reach.
- Avoid placing items or working above shoulder height.
- Provide adjustable chairs.
- Tilt the work surface to enable work at elbow height.
- Remove mismatches in work surface heights to allow for sliding rather than lifting materials.

**Administrative Controls**
- Provide frequent or longer rest breaks.
- Rotate workers through several jobs with different physical demands.
- Vary the jobs individuals perform.
- Perform stretching exercises to relieve stress and limber muscles.

Pressure/Contact/Repeated Impacts

Problems arise when there is direct pressure or contact stress to the hands, arms, or thighs when completing a task. In addition to being uncomfortable, it can restrict blood flow and damage nerves. Use of the knee as a hammer (such as carpet laying) and or use of hand as a hammer (pounding with palm of hand) should be avoided.

**Goal:** Eliminate/minimize direct pressure or contact stress or repeated impact.

**Engineering Controls**
**Palm Pressure:**
- Change the shape, contour, size, and/or covering of tool handles to evenly distribute pressure.
- Use pneumatic tools.

**Arm Pressure:**
To prevent forearms from leaning against sharp edges:
- Pad edges.
- Round the edges.
- Provide arm rests.
- Redesign the task.
Legs and Feet Pressure:
Standing for prolonged periods, leaning against or across equipment, or inadequate legroom under the work station, can reduce circulation. The same techniques as applied above to reduce forearm pressure are applicable here. In addition:
- Provide foot rest or foot rail.
- Provide floor or anti-fatigue mats.
- Wear cushioned insoles.
- Reduce the size of the table.
- Change the workstation layout to prevent leaning across obstacles.

Lack of Adjustability

To accommodate different height and reach requirements and to avoid pressure points and awkward positions, equipment and chairs should be adjustable.

Goal: Provide for adjustable workstations to meet different individuals needs.

Engineering Controls
- Use a scissor lift as a workstation.
- Raise workers with platforms.
- Provide adjustable chairs.
- Add hydraulic or pneumatic legs to tables and machines.
- Provide sit-lean stands or standing backrests.
- Supply foot rests, anti-fatigue mats, or other floor mats.

Administrative Controls
- Perform stretching exercises to relieve stress and warm up muscles.
- Allow for alternate postures, including switching between sitting and standing work.
- Store frequently used items close to waist height.

Environment

The environment directly affects productivity and quality. Employees that lift, move objects, manipulate tools or equipment suffer from fatigue.

Goal: Maintain a healthy working environment.

Engineering Controls
- Lighting: Install shields, improve placement, install task lights, provide back lighting, clean lights and keep clear.
- Temperature: Maintain comfort levels, maintain humidity levels, deflect cold air.
- Noise levels: Provide ear plugs or mufflers, provide listening devices.
Lifting and Materials Handling

Employees that lift, push, or pull loads, supplies, or other materials are at risk for back injury.

**Goal:** Minimize overexertion.

**Engineering Controls**
- Use mechanical assist devices/lifting aids (power tuggers, forklifts, power lifts, hoists, conveyors, etc.).
- Automate to relieve manual operations.
- Arrange workstation to avoid changing heights (materials can be pushed rather than lifted).
- Keep wheels in good repair. Put handles on the item to be pushed. Use large wheels with good bearings.
- Reduce weight or size of load.

**Administrative Controls**
- Train employees in proper materials handling techniques. (See materials handling section)
- Require employees to get assistance when lifting heavy or awkward loads.
- Provide frequent or longer rest breaks.
- Rotate workers through several jobs with different physical demands.
- Vary the jobs individuals perform.
- Perform stretching exercises to relieve stress and warm up muscles.
- Reduce shift length or curtail overtime.

Environment

The environment directly and indirectly affects employees’ comfort, health, and job quality. Employees notice temperature, lighting, vibration (covered separately), hard floors, noise or coming in contact with objects of low temperature (metal tools or equipment).

**Goal:** Maintain a comfortable environment.

**Engineering Controls**

- **Lighting:**
  - Install shields to minimize glares.
  - Improve placement of lighting to increase intensity and/or reduce glare.
  - Install task lighting or indirect lighting to soften shadows.
  - Provide back lighting to enhance contrasts.
  - Clean lights and fixtures regularly.

- **Temperature:**
  - Maintain comfortable temperature (68-72°F) and air velocity.
  - Maintain humidity level in air to 30-50%, but exercise caution as some computer equipment (notably laser printers) can not operate with higher humidity levels.
  - Deflect cold air. Shield employees from hot or cold objects.
Noise:
• Enclose machinery to minimize noise.
• Dampen noise with absorbing materials.
• Modify equipment by adding mufflers, quieter parts, seals, and other noise control devices.
• Reduce vibration.
• Move or isolate worker from noise source.
• Maintain equipment.

Floor Surface:
• Provide anti-fatigue floor mats.
• Wear cushioned shoes.
• Maintain anti-slip surfaces.
• Maintain even levels (provide ramps rather than stairs, wherever possible).

Administrative Controls
• Provide frequent or longer rest breaks.
• Rotate workers through several jobs with exposure to less extreme environments.
• Vary the jobs individuals perform.
• Perform stretching exercises to relieve stress and warm up muscles.
• Reduce shift length or curtail overtime.
• Conduct periodic physical exams to test vision, hearing, etc.

Personal Protective Equipment Controls
• Allow employees to wear different types or amounts of clothing to protect against extreme heat or cold.
• Provide hearing protection, such as ear plugs.

Step 7: Workstation Layout and Design

When designing a workstation, consider:
• The physical makeup (employee body sizes) of the workforce.
• The body parts involved in performing the work task/job.
• Whether workstations are fixed or adjustable (adjustable is always preferred).
• The location and design of controls and displays.

Workstation Measurements
Problems will surface when workstations cannot comfortably fit the worker, requiring constant bending or awkward positions or over-reaching. Insufficient leg or headroom forces workers to adopt awkward postures. Adjustable workstations are the solution to this problem. If the work surface is not adjustable, a platform can be used to raise the worker (a least desirable choice) or a pedestal to raise the work surface. NIOSH has optimum workstation positions for standing and seated work. These take into consideration boundaries for functional reaches for most of the working population.

General Guidelines
It’s important to have adequate workspace, clearance, and easy access to tools and other items. Clearance is needed for the head, arms, torso, knees and feet.

Step 8: Medical Management and Employee Training
Medical management modified duty/return to work. Consult a medical provider with a thorough understanding of their impact on your workplace. American’s Claims Directors,” American’s Medical Directors’ Association.

An ergonomics medical management program may be an effective way to manage workers with modified duty/return to work. Consult a medical provider with a thorough understanding of their impact on your workplace. American’s Claims Directors,” American’s Medical Directors’ Association.

Education
Educate employees, supervisors, and physicians previously under the assumption that education is key to reducing workplace injuries.

Exercise Program
Regular stretching and exercises help prepare the body for the job and help prevent injuries. You are encouraged to use different types of work and tasks.

Some general guidelines:
• Avoid placing maximum arm reaches overhead.
• Locate frequently used controls within easy reach.
• Keep frequently used controls in one place.
• Ensure that tools and controls are accessible.
• Provide enough room to accommodate body parts.
• Ensure that controls need not be reached through doors or openings or elbows.

Displays and Controls
Mistakes are often made at displays and controls.
• Digital displays
• Moving points
• Signs with icons
• Design for easy reading
1. Flip switch
2. Move a lever
3. Red for stop
4. Top button
5. Telephone button
6. Clock
7. Computer keyboard

Step 9: Medical Management and Employee Training
Some general guidelines for workstation layout:

- Avoid placing frequently needed tools or parts above shoulder height and/or parts close to maximum arm reach.
- Locate frequently needed tools or parts within the shortest reach to avoid over-stretching.
- Keep frequently used tools or parts close to and in-front of the body.
- Position tools or parts for taller workers so those workers do not have to bend while reaching.
- Ensure that tools and parts to be lifted are kept between waist and heart line height.
- Provide enough clearance to accommodate the largest workers.
- Ensure that no obstructions exist between the worker and items needed to accomplish a task (controls include: reorganizing shelves or equipment, increasing size of openings or eliminating barriers).

Displays and Controls

Mistakes are often avoided when controls and displays are easy to operate, accessible, and easily understood. The location of these indicators should take into consideration their importance, frequency and sequence of use, and the height of the worker. The following are some general guidelines for designing displays and control devices.

- Digital displays are best when precise information is needed.
- Moving pointers are better for relative information.
- Signs with icons and labels should be used to display warnings.
- Design for expectations. Use standards, such as:
  1. Flip switch up for on.
  2. Move a lever forward to increase speed.
  3. Red for stop.
  4. Top button is for up and bottom button is for down.
  5. Telephone buttons.
  6. Clocks
  7. Computer keyboards.

Step 8: Medical Management

Medical management emphasizes early detection/intervention, prompt treatment, timely recovery of MSD, and modified duty/return to work program. For a successful medical management program, the company must have a medical provider who understands your business and work environment and is willing to become involved to understand employees. Ideally the medical provider will be a part of your Ergonomics Committee. Great American’s Claims Department can assist you in locating a provider.

An ergonomics medical program consists of the following:

Education

Educate employees, supervisors, and managers on the signs and symptoms of MSD. This was discussed previously under the section titled Training and Education. (pg. 5)

Exercise Program

Regular stretching reduces muscle tension, promotes relaxation, and improves circulation. It also helps prepare the body for activity, which is essential to good health and productivity. It keeps the muscles limber and helps prevent injuries.

You are encouraged to consult with your medical provider and or physical therapist for exercises to use for your types of work and to show employees how to safely perform the exercises.
Great American offers information on Ergonomics Exercises.

**Early Symptoms/Health Surveillance**
Encourage employees to report early symptoms and seek prompt evaluation from the medical provider. Any conflicting demands, policies, or work practices that discourage prompt reporting should be removed. The earlier symptoms are identified and treated, the less likely a more serious disorder will develop.

Regular medical examinations and testing devices can also be used for identifying early symptoms (Note: accurate testing devices are still in the exploratory stages, though they have worked successfully in pilot studies). Functional capacity evaluation completed by a competent medical provider is beneficial for worker placement and to evaluate ability to perform essential job functions.

**Medical Providers**
Give medical providers the opportunity to become familiar with jobs and job tasks. This can assist providers in matching an employee’s capabilities (functional physical capacity) with the appropriate job (essential job functions) and company in identifying ergonomic hazards and appropriate controls. Your medical provider can also advise if any exercises should be done on the job site and which exercises are appropriate. The best way for a medical provider to become familiar with your company is by conducting periodic plant walk-through evaluations. If that is not an option, the medical provider should review ergonomics task analysis reports, videos of jobs, job descriptions, narrative descriptions, and job safety analyses.

**Treatment**
Work with the medical provider and Great American’s Claims Department to ensure treatment procedures are appropriate and followed by the employee. MSD is treatable. If identified early, many disorders are treated with anti-inflammatory drugs, cold packs, special exercises, splints and supports, and restricted duty/modified duty. Surgery may never be necessary.

A suggested early intervention plan is to have your medical provider scheduled monthly plant visits. All employees are encouraged to meet with the medical provider to discuss any concerns or discomfort they may be experiencing. In most cases treatment is first aid.

**Modified Duty/Return to Work Program**
As with any injury/illness, the company’s goal should be to return the employee to work as soon as possible. Jobs should be modified to meet the limitations stated by the medical provider. Complete removal from the work environment should be avoided.

Great American has a model Return to Work Program.

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**Step 9: Ergonomics Program Evaluation and Record Keeping**

In order to ensure the ergonomics program is operating effectively, it should be reviewed at least every three years. An annual review is best. Record keeping is also critical. At a minimum, companies should maintain written records of the following:

- Reports of MSDs and MSD signs, symptoms and hazards;
- Responses to those reports;
- Job hazard analyses performed;
- Hazard control measures;
- Ergonomic program evaluations;
• Employee injuries related to ergonomic injuries, such as work restrictions, time off work, and medical opinions;
• Employee training;
• Administrative controls, if implemented;
• Reductions in the number and severity of MSD.

List of Inserts and Worksheets

Ergonomics Task Analysis Worksheet GAIC.503-2
Ergonomics Walkthrough Worksheet GAIC.503-3
Ergonomics Symptoms Survey - Early Intervention GAIC.503-4
NIOSH Recommended Workstation Measurements GAIC.503-5
Sample Exercise Program GAIC.503-6
Sample Office Workstation Layout/Checklist GAIC.503-7
Sample Back Safety and Ergonomics Training Handout GAIC.503-8
Glossary of Terms GAIC.503-9

Additional resources are available. For more information, contact your Great American agent.
The loss prevention information provided in this brochure is based on generally accepted safe practices for minimizing loss in the described situations. In providing such information, Great American Insurance Group does not warrant that all potential hazards or conditions have been evaluated or that they can be controlled. The information is not intended as an offer to write insurance for such conditions or exposures. The liability of Great American and/or its subsidiaries is limited to the terms, limits and conditions of actual insurance policies issued to specific insureds.

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