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## Ergonomics Policy Handbook

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## What is Ergonomics?

Ergonomics is the science of tailoring workplace conditions and job demands to those who do the work. The goal of effective ergonomics is to reduce or eliminate illness and injury risks, improve productivity, and increase morale. This guide helps you to assess your agency's work tasks and associated risk factors and to identify solutions to reduce those risks.

## What are Ergonomic Risk Factors?

Job responsibilities often require employees to do activities that create the risk of either an immediate injury or a repetitive pattern of activity that can stress or strain the body over time, eventually causing significant injury. Common ergonomic risk factors are repetitive, forceful, or prolonged exertions; repetitive use of the hands; frequent and/or heavy lifting; pushing, pulling, or carrying heavy objects; and prolonged and/or awkward postures. Vibration, and excessive cold or heat, may increase the risk of these activities.

Working conditions within park and recreation departments are varied and unique and include multiple risk factors more likely to cause excessive stress and strain on tendons, muscles, ligaments, cartilage, blood vessels, and nerves, leading to injury. Whether performing parks maintenance activities or working hands on with patrons, the degree of risk depends on the intensity, frequency, and duration of exposure to risk factors. The employee's ability to meet the physical demands of the job may also contribute to an increased risk of injury. Generally, injuries negatively impact the work morale of the injured employee and his sense of well-being and worth. In addition, there are financial costs to both the employee and the agency. More importantly, injuries can inhibit an injured employee's ability to enjoy time with family and friends, engage in an active lifestyle, or even diminish quality of life.

Through employee education and by implementing some simple and practical ergonomic principles, PDRMA members can reduce or eliminate ergonomic-related injuries, decrease costs for their agencies and all PDRMA members, and improve the health and morale of employees, both on and off the job.

## Which Ergonomic Risk Factors Account for Most On-the-Job Injuries?

The Occupational Safety and Health Administration (OSHA) identifies the following five ergonomic risk factors as ones that can result in both on-the-job and off-the-job injuries:

1. **Forceful exertions:** Lifting, pinching, grasping, pushing, pulling, and carrying.
2. **Postures:** Awkward or prolonged postures, including bending or twisting at the neck and/or back, reaching overhead or below the knees, or performing tasks away from your body that require overreaching.
3. **Contact stress:** Leaning on fixed objects (kneeling, arms resting on the edge of a desk) or using a hand or foot like a hammer to strike a fixed object.
4. **Repetition:** Performing the same motion, or series of motions, over and over.
5. **Vibration:** Use of tools that vibrate, such as a jackhammer.

These risks can affect the safety of your employees both on and off the job. By implementing one or more of the strategies presented in this guide, your agency can decrease those risks by creating a safer work environment and encouraging employees to always work with their personal safety and health in mind.

## What are the Goals of an Ergonomic Policy?

- Identify workplace hazards.
- Reduce or eliminate workplace hazards.
- Increase productivity.
- Improve morale.
- Lower costs by reducing injuries and worker's compensation claims.
- Improve employee retention.
- Identify training needs.
- Implement effective supervisor- and employee-injury-prevention training programs.

## How Should an Agency Identify Workplace Ergonomic Hazards?

1. **Review losses:** Contact your PDRMA Risk Management Consultant for your agency's loss history and current losses or download the loss information from PDRMA's Web site. Use the Employee Injury Analysis Checklist (Appendix A) to help analyze loss history and identify injury-exposure concerns.
2. **Identify a task:** Identify tasks that currently or historically have caused or contributed to employee injuries. Schedule time to formally observe these problematic tasks and complete an ergonomic-risk checklist. Use Appendix B – General Ergonomic Risk Assessment Checklist.
3. **Determine solutions:** Use the General Ergonomic Risk Solution Guide (Appendix C) to assist in developing solutions.
4. **Develop an action plan:** Develop an action plan identifying work tasks that need immediate attention, set goals to prioritize the problem tasks identified, assign a team leader to be responsible for coordinating your plan, and establish implementation steps and target completion date(s) for activities or programs. Use Appendix D – Action Plan.
5. **Evaluate progress:** Schedule time for your staff to implement your action plan and monitor progress. Agency supervisors can use the Action Plan – Evaluate Progress (Appendix D).

## What are the Types of Ergonomic Solutions?

Ergonomic solutions decrease stress on the human body and the employees that perform the task. Since there are usually many options for getting a particular task done, it requires a team approach including employees, supervisors, and the administration to choose the best ergonomic solution for each high-risk task identified.

1. **Administrative solutions** – These include changing work practices or the way work is organized. Management must monitor work practices and gather employee feedback to ensure

effectiveness. Look at how different employees perform the same tasks and then consider the following solutions:

**a. Find solutions through contractors.**

For especially hazardous job tasks, consider contracting them to an outside vendor. This transfers the risk of injury to the contractor who has highly trained employees and special equipment to perform these tasks. Contractors can limit exposure to lifting and material handling stress to agency operations such as tree removal and brush trimming by changing transportation or delivery locations, or to reducing the size of a delivery.

**b. Provide variety in jobs.**

Use job rotation and/or increase job responsibilities to provide more task variety. To be effective, change jobs and tasks so they differ in the:

- i. Muscles or body parts used.
- ii. Working postures.
- iii. Amount of repetition.
- iv. Pace of work.
- v. Amount of physical exertion required.
- vi. Visual and mental demands.
- vii. Environmental conditions.

**c. Adjust work schedules and work pace.**

Gradually introduce new employees to the physical demands of strenuous or repetitive work tasks and include those returning from long absences back to a normal work pace and workload. Job rotation is an effective way to use different muscles, body parts, or postures.

**d. Provide recovery time.**

Recovery periods (i.e., muscle relaxation periods) can help prevent muscle fatigue and injury. Several short breaks can reduce the frequency and duration of physically demanding activities. Ask employees for ideas about the best rotation or break schedules. Their suggestions can help reduce the negative physical impact of strenuous work tasks while maintaining a productive work schedule.

**e. Modify work practices.**

- i. Pay close attention to how employees do the work. Encourage them to be comfortable, change positions, and stretch during work periods. Supervisors should use positive reinforcement or employee counseling to redirect employees not following established safe work practices. The body is stronger, more efficient, and less prone to injury when it is in midrange postures and within the area that is above the knees, below the shoulders, and close to the body – the power zone.

- ii. Midrange postures do not require bending the joints of the neck, back, legs, arms, and wrists to extreme positions. The power zone reflects the area where workers have the greatest power to perform heavier work tasks with less bending, stooping, or reaching.
  - iii. Administrative solutions can help reduce workers' exposure to risk factors by limiting the amount of time on "problem jobs" that are shown to cause employee injuries. The most effective way to eliminate problem jobs is to change them. Do this by implementing the right engineering solutions, outlined below, and modifying work practices.
2. **Engineering solutions** – These include rearranging, modifying, redesigning, providing or replacing tools, equipment, workstations, packaging, parts, processes, products, or materials. Minimize the need for administrative controls and personal protective equipment to reduce potential employee injury.
- a. Research equipment catalogs, call vendors, or ask other districts for additional assistance and options. (Ask if vendors can package products in smaller loads or provide other options/products.)
  - b. Purchase assistive devices to decrease loads on the body (lift and trailer gates, mechanical lifts, hand-trucks, carts, lifts, scissor tables, skid loaders, hi-lifts and hundreds of related devices that can reduce the strain on the human body).
  - c. Consult with PDRMA or one of PDRMA's ergonomic experts for insight into improvements, costs, and potential value.
3. **Training** – Training alone is not an ergonomic solution. Combine it with workplace changes, train employees, and include hands-on practice with new tools, equipment, or work practices to ensure employees have the skills to work safely. Interactive training is most effective because it keeps the employee engaged. Be sure to:
- a. Provide hands-on practice when introducing new tools, equipment, or procedures.
  - b. Use several types of visual aids (e.g., pictures, charts, videos) showing actual tasks in agency work areas.
  - c. Hold small-group discussions and problem-solving sessions.
  - d. Give employees ample opportunity for questions.
  - e. Ask veteran employees what solutions they have learned over the years to reduce ergonomic exposures.

*References:*

Zin Cheung, et. al. *Ergonomic Guidelines for Manual Material Handling*. DHHS (NIOSH) Publication No. 2007-13. California Department of Industrial Relations, 2007. Web. 27 April 2011.

Accelerated Rehabilitation Centers, Diane Newquist and Mark Bell, [www.acceleratedrehab.com](http://www.acceleratedrehab.com), 2011.

## Appendix A Employee Injury Analysis Checklist

**Agency:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Completed by:** \_\_\_\_\_

This loss-analysis checklist uses agency-specific injury experience to guide supervisors in identifying tasks currently causing injuries or that could cause injuries.

<b>REVIEW LOSSES</b>	<b>Y</b>	<b>N</b>
Are injuries occurring in a specific department? Comment:		
Are injuries occurring while performing a specific task? Comment:		
Are multiple people injured performing the same task? Comment:		
Are one or several employees sustaining multiple injuries? Comment:		
What were the employees doing when injury occurred?		
1. Lifting		
2. Lifting and twisting		
3. Pushing		
4. Pulling		
5. Climbing on/off equipment, vehicles or ladders		
6. Walking		
7. Working in awkward postures		
Comments:		

## **Appendix B**

# **General Ergonomic Risk Factors and Assessment Checklist**

### **Risk Factors**

The following are guidelines for activities that should be *limited or restricted*.

**Forceful exertions:** lifting, pinching, grasping, pushing, pulling, and carrying.

*Lifting:*

- Lifting to or from below the knees.
- Lifting to or from above the shoulders.
- Lifting an item that weighs more than 100 pounds.
- Lifting an item that weighs between 50 - 100 pounds.
- Lifting an item that is large or awkwardly shaped.

*Push/Pull:*

- Pushing or pulling a heavy object(s) without use of a cart, dolly, or other mechanical assistance.
- Pushing or pulling a heavy object(s) without use of a handle(s) or secure handholds.

*Carrying:*

- Carrying with one hand
- Two-hand carry for more than 25 feet
- Carrying performed more than five times per day
- Carrying performed while climbing on a ladder or other equipment

**Postures:** awkward or prolonged postures, including bending or twisting at the neck and/or back, reaching overhead or below the knees, or performing tasks away from your body that require overreaching.

*Awkward Postures:*

- Prolonged bending at the waist
- Kneeling on one or both knees for prolonged periods of time
- Working with hands above shoulders for prolonged periods of time
- Looking up or down for prolonged periods of time
- Working with the neck or trunk twisted for prolonged periods of time
- Working with the wrist in a bent position for prolonged periods of time
- Working with the arms extended for prolonged periods of time

**Contact stress:** leaning on fixed objects (kneeling, arms resting on the edge of a desk) or using a hand or foot like a hammer to strike a fixed object.

*Contact Stress:*

- Palm of the hand used like a hammer to strike a hard surface
- Sole of the foot used to strike a hard surface
- Knee or other body part used to strike objects
- Kneeling (one or both knees) required on a hard surface like concrete or tile?
- Prolonged bending at the waist
- Kneeling on one or both knees for prolonged periods of time

**Repetition:** performing the same motion, or series of motions, over and over.

*Repetition:*

- Performing a task more than 100 times per day
- Performing a task between 50-99 times per day
- Performing a task between 25-50 times per day
- Performing a task between 1-24 times per day (heavy objects)

**General Risk Factors:** use of tools that vibrate, use of personal protection equipment

*General:*

- Employees observed using required PPE while performing the task
- PPE items are in safe, usable condition



## Appendix B (continued) Ergonomic Assessment Checklist

Agency: \_\_\_\_\_ Department: \_\_\_\_\_

Job Task: \_\_\_\_\_ Job Location: \_\_\_\_\_

Completed by: \_\_\_\_\_ Date: \_\_\_\_\_

Observe this task and interview employees performing the task as needed to answer the questions below. Observe only one task at a time.		
<b>FORCEFUL EXERTIONS</b>		
<b>LIFTING</b> (if no lifting is required, proceed to push/pull)	<b>Y</b>	<b>N</b>
Does the task require lifting to or from below the knees?		
Does the task require lifting to or from above the shoulders?		
Does the item lifted weigh more than 100 pounds?		
Does the item lifted weigh between 50 - 100 pounds?		
Does the item lifted weigh less than 50 pounds?		
Does the item lifted have handles?		
Is the item large or awkwardly shaped?		
Does staff demonstrate proper lifting technique?		
Has staff been instructed in proper lifting technique?		
<b>PUSH/PULL</b> (if no pushing or pulling is required, proceed to awkward postures)	<b>Y</b>	<b>N</b>
Can the employee use a cart, dolly, or other mechanical assistance to move the item(s)?		
If mechanical assistance is available, is it used?		
Does the item being pushed or pulled have a handle or handles?		
If mechanical devices are available, are they in safe, working condition?		
<b>CARRYING</b> (if no carrying occurs, proceed to awkward postures)		
Does the task require carrying with one hand?		
Does the task require a two-hand carry for more than 25 feet?		
Is carrying performed more than five times per day?		
Is carrying performed while climbing on a ladder or other equipment?		
<b>POSTURES</b>		
<b>AWKWARD POSTURES</b> (if awkward postures are not common, proceed to contact stress)	<b>Y</b>	<b>N</b>
Identify the awkward postures observed for this task from the list below.		
1. Prolonged bending at the waist		
2. Kneeling on one or both knees for prolonged periods of time		
3. Working with hands above shoulders for prolonged periods of time		
4. Looking up or down for prolonged periods of time		
5. Working with the neck or trunk twisted for prolonged periods of time		
6. Working with the wrist in a bent position for prolonged periods of time		
7. Working with the arms extended for prolonged periods of time		
Have employees been instructed in reversal-of-posture exercises?		
<b>CONTACT STRESS</b>		
<i>(If contact stress is not common, proceed to repetition)</i>		
Is the palm of the hand used like a hammer to strike a hard surface?		
Is the sole of the foot used to strike a hard surface?		
Is the knee or other body part used to strike objects?		
Is kneeling (one or both knees) required on a hard surface like concrete or tile?		

## Appendix B Ergonomic Assessment Checklist (continued)

<b>REPETITION</b> <i>(If repetition is not involved, proceed to personal protective equipment)</i>	<b>Y</b>	<b>N</b>
Is the task performed more than 100 times per day?		
Is the task performed between 50-99 times per day?		
Is the task performed between 25-50 times per day?		
Is the task performed between 1-24 times per day?		
<b>PERSONAL PROTECTIVE EQUIPMENT (PPE)</b>		
Is there a policy on the use of PPE?		
Was/were the employee/employees utilizing PPE when the injury occurred?		
Would injury have occurred if PPE had been used?		
If required, are employees observed using required PPE while performing the task?		
Are PPE items in safe, usable condition?		
Using the information above, the supervisor should identify a task that is leading to injuries. Observe this task and interview employees performing the task as needed to answer the questions below. Observe only one task at a time.		

Refer to Risk Factors to determine whether ergonomic solutions should be considered. If so, use the General Ergonomic Solutions Guide- Appendix C.

## Appendix C

### General Ergonomic Solution Guide

Note the possible solutions below, based on the results of the General Ergonomic Risk Factors and Assessment Checklist (Appendix B). For each section, refer to the completed General Ergonomic Risk Factors Assessment Checklist as necessary. Check any possible solutions for implementation. After completing this solution guide, proceed to the Action Plan Form (Appendix D) to create an action plan to address risk(s).

**You can incorporate the following possible solutions into an action plan for addressing ergonomic concerns.**

#### General Solutions:

- Talk to employees – Brainstorm with engineers, maintenance personnel, managers, and employees to generate ideas.
- Contact peers at other agencies – Other agencies may have addressed the same ergonomic issues, saving you time, money, and effort.
- Review existing policy, or create a new one, addressing safe performance of task.
- Instruct employees in reversal-of-posture exercises.
- Research equipment catalogs or call vendors for advice and options. (Vendors may be able to package products in smaller loads or provide other options/products.)
- Purchase assistive devices to decrease loads on the body (dolly, hand-truck, cart, duffle bag on wheels).
- Encourage mentoring with other employees.
- Designate task as a two-person job.
- Consult with PDRMA ergonomic expert.

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- Modify tasks (specifics in the action plan).
- Training:
  - One-on-one training with employee
  - Online training for employees
  - Group training session

## Appendix C (Continued)

### Task Specific Solutions:

<i><b>FORCEFUL EXERTIONS—SOLUTIONS</b></i>	
<i><b>LIFTING</b></i>	
	Raise or lower starting height of object to waist level
	If unable to raise or lower object to waist level, adjust starting height of object between thigh and shoulder level
	Instruct employee(s) in safe and proper lifting techniques
	Implement mandatory two-person lift
	Investigate mechanical devices for lifting
	Contact vendor to discuss packaging product in smaller quantity
	Contact vendor to discuss availability of packaging with handles
<i><b>PUSH/PULL</b></i>	
	Use a cart, dolly, or other mechanical device to move the object
	Adjust handle to an ideal height – between waist and chest
	Confirm mechanical equipment is available and in safe working condition
	Train employee(s) in use of mechanical device
	Investigate purchase of mechanical device
<i><b>CARRYING</b></i>	
	Use of cart or mechanical device when carrying more than 50 ft.
	Use carrying device such as wheeled case
	Move supplies closer to destination using vehicle to reduce carrying distance
<i><b>AWKWARD POSTURES</b></i>	
	Train employees in use of proper body mechanics
	Implement reversal-of-posture exercises following tasks requiring awkward postures
	Use step ladder to bring body closer to work, reducing reaching and looking up while performing overhead work
	Investigate re-arranging equipment, product, or process to reduce or eliminate awkward posture

		Raise or lower object to reduce or eliminate forward or backward bent posture
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### **Appendix C (Continued)**

		Implement employee rotation strategy to reduce duration of awkward posture(s)
		<b><i>CONTACT STRESS</i></b>
		Use knee/kneeling pads for tasks involving kneeling
		Use proper tools instead of using palm, sole of foot, or knee like a hammer
		Pad sharp corners or edges to reduce contact stress
		<b><i>REPETITION</i></b>
		Automate process or task versus manual performance
		Outsource process or task
		Incorporate job rotation into process or task
		Implement reversal-of-posture exercises following tasks requiring repetition
		<b><i>PERSONAL PROTECTIVE EQUIPMENT (PPE)</i></b>
		Implement policy on use of PPE for task
		Review policy and procedure on use of PPE for task
		Repair or replace defective PPE items
		Investigate purchase of appropriate PPE items for task

## Appendix D PDRMA Action Plan Form

GOAL DESCRIPTION	STEPS TO IMPLEMENT	TARGET DATE	RESPONSIBLE PERSON	OUTCOME MEASURE

Summarize areas of concern identified from the checklists:

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Review responses from the General Ergonomic Safety Checklist (Appendix B) and General Ergonomic Solution Guide (Appendix C). Identify an area of concern and develop an action plan to address hazardous tasks. Document the steps and time frames for the completion of each step. Identify responsible parties for implementing each step of the action plan and the outcome measure used to determine the effectiveness of the plan. We recommend the supervisor signs off on the form to indicate compliance and accountability for promoting a safe work-environment for employees. Employee Signature: \_\_\_\_\_

Date: \_\_\_/\_\_\_/\_\_\_

Superintendent/Supervisor Signature: \_\_\_\_\_

## Appendix D PDRMA Action Plan Form (Evaluate Progress)

This section assures the changes proposed in the original action plan still meet the goals of improving employee safety. Answer the following questions:

1. Have all the suggestions in the action plan been implemented?	Y	N
2. Does the action plan need to be modified?	Y	N
3. Have there been additional injuries in the same department, performing the same task, which were previously addressed by the action plan?	Y	N

<b>EVALUATE PROGRESS</b>	<b>SUMMARIZE FINDINGS</b>	<b>FOLLOW-UP ACTION TO ADDRESS CONTINUED CONCERNS</b>
3 months		
6 months		
12 months		

## **Appendix E**

### **Ergonomics Policy – Sample**

#### **Ergonomics Policy**

Ergonomics is the science of tailoring workplace conditions and job demands to those who do the work. Effective ergonomic interventions can provide a safer working environment for (AGENCY) staff. It is the policy of the (AGENCY) to employ a proactive, sustained commitment to creating and maintaining a work environment incorporating practical ergonomic solutions to help reduce or eliminate ergonomic-related injuries, decrease related financial costs, and most importantly, improve the safety, health, and morale of employees, both on and off the job.

The (AGENCY) adopts the following Ergonomics Policy Guide incorporating the elements of a proactive ergonomics program: acknowledging ergonomic risk factors, identifying program goals, analyzing ergonomic hazards, evaluating types of ergonomic solutions, and providing necessary training.

This policy applies to all full-time, part-time, and seasonal employees in all departments at the (AGENCY).

#### ***Notice of Ergonomic Policy Receipt***

The (AGENCY) establishes this policy to minimize the potential for injury to you and to provide a safe and healthful workplace for all employees. Your participation is essential to the success of our safety and health program, and is a condition of your employment. Failure to abide by the policy can result in potential discipline and/or termination. Should you have any questions, consult your supervisor for assistance.

I have read, understand, and agree to comply with the established Ergonomic Policy.

**Employee:** \_\_\_\_\_

**Date:** \_\_\_\_\_