

**Ergonomics
for the
Prevention
of
Musculoskeletal Disorders**

**Draft Guidelines
for
Retail Grocery Stores**

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Executive Summary

OSHA's Ergonomics for the Prevention of Musculoskeletal Disorders: Guidelines for Retail Grocery Stores provide practical recommendations to help grocery store employers and employees reduce the number and severity of injuries in their workplaces. Many of the work-related injuries and illnesses experienced by grocery store workers are musculoskeletal disorders (MSDs), such as carpal tunnel syndrome, back injuries and sprains or strains that may develop from lifting, repetitive motion, or overexertion.

More remains to be learned about the relationship between workplace activities and the development of MSDs. However, OSHA believes that the experiences of many grocery stores provide a basis for taking action to better protect workers. As the understanding of these injuries develops and information and technology improve, the recommendations made in this document may be modified.

Many grocery stores that have implemented injury prevention efforts have successfully reduced work-related injuries and workers' compensation costs (5). The grocery store industry has reduced occupational injuries by a third over the last 10 years, from 12.5 per 100 full-time workers in 1992 to 8.1 in the year 2001 (17). Many times, changes made to reduce injuries also lead to increased worker efficiency and lower operating costs. For example, designing checkstands to reduce ergonomic risk factors such as twisting or extended reaching can improve cashier effectiveness and productivity (6). The purpose of these guidelines is to build on the progress that the grocery store industry has made in addressing causes of these injuries and illnesses. These guidelines are intended only for retail grocery stores and combined full-line supermarket and discount merchandisers. The discussion is intended primarily for the grocery store manager and his or her employees, but may also be useful for a corporate safety professional or a department manager. OSHA did not develop these guidelines to address warehouses, convenience stores, or business operations that may be located within grocery stores, such as banks, post offices, or coffee shops. However, operations in retail or distribution that involve similar tasks or operations as those addressed in these guidelines may find the information useful.

The general information in these guidelines provides grocery stores with a useful reference when determining the need for ergonomic solutions. The information presented here is intended as a general guideline to be adapted to individual situations. The recommendations provide a flexible framework that grocery store employers can adapt to the needs and resources of each individual grocery store. The key issues and recommended solutions in these guidelines may not be applicable or necessary in every grocery store situation. For example, OSHA recognizes that a small employer may decide to use a less formal approach than a larger employer and be equally effective. Additionally, OSHA realizes that small grocery stores may need assistance to implement an appropriate ergonomics process. That is why we emphasize the availability of the free OSHA consultation service for smaller employers.

The heart of these guidelines is the description of various solutions that have been implemented by grocery stores. OSHA recommends that these be considered in the context of a systematic process that:

- Provides management support;**
- Involves employees;**
- Identifies problems;**
- Implements solutions;**
- Addresses reports of injuries;**
- Provides training; and**
- Evaluates progress.**

To develop these guidelines, OSHA reviewed existing ergonomic practices and programs in the grocery store industry and conducted site visits to observe existing programs in action. In addition, the Agency reviewed available scientific information regarding work activities that may benefit from ergonomic improvements and specific solutions. OSHA also conducted one-on-one meetings with major stakeholder groups to gather the best available information on typical workplace activities and on practices, programs and processes that have been used successfully in the grocery store industry.

These guidelines are advisory in nature and informational in content. They are not a new standard or regulation and do not create any new OSHA duties. Under the OSH Act, the extent of an employer's obligation to address ergonomic hazards is governed by the general duty clause. 29 U.S.C. 654(a)(1). An employer's failure to implement the guidelines is not a violation, or evidence of a violation, and may not be used as evidence of a violation, of the general duty clause. Furthermore, the fact that OSHA has developed this document is not evidence and may not be used as evidence of an employer's obligations under the general duty clause; the fact that a measure is recommended in this document but not adopted by an employer is not evidence, and may not be used as evidence, of a violation of the general duty clause. In addition, the recommendations contained herein should be adapted to the needs and resources of each individual place of employment. Thus, implementation of the guidelines may differ from site to site depending on the circumstances at each particular site.

Introduction

Each year the Bureau of Labor Statistics (BLS) gathers data on the number, rate and characteristics of occupational injuries and illnesses occurring in the private sector, including the retail grocery industry. In 2001, the industry reported 180,800 work-related injury and illness cases, of which 46,200 resulted in days away from work (2).

Grocery store work is physically demanding. Grocery store workers handle thousands of items each day to stock shelves, check groceries, decorate bakery items, and prepare meat products. These tasks involve several risk factors. The most important of these are:

- Force - the amount of physical effort required to perform a task (such as heavy lifting) or to maintain control of equipment or tools;
- Repetition - performing the same motion or series of motions continually or frequently for an extended period of time; and
- Awkward postures - assuming positions that place stress on the body, such as reaching above shoulder height, kneeling, squatting, leaning over a counter, or twisting the torso while lifting (9).

In the grocery store industry, these risk factors can lead to injury and illness. In these guidelines, we use the term MSD to refer to a variety of injuries and illnesses, including:

- Carpal tunnel syndrome;
- Tendinitis (tendon inflammation);
- Rotator cuff injuries (a shoulder problem);
- Epicondylitis (sometimes called tennis or golfers' elbow);
- Trigger finger; and
- Muscle strains and back injuries that occur from repeated use or overexertion.

In 2001, BLS reported about 17,600 MSDs with days away from work that occurred from a one-time event or repetitive activity (17). Back cases accounted for more than 9,500 MSDs. About 80% (13,800) of all MSDs were sprain, strain and tear injuries (3).

Putting merchandise in the front of a display case improves the appearance of merchandise. However, working in the back of a deep display case to face or stock merchandise can be awkward and uncomfortable, especially when heavy items are involved.

One familiar solution to this problem is display cases that are stocked from the back. The product, such as cartons of milk, slides down an inclined shelf so that it's always in front of the customer. It's also easier for the employee stocking the shelf.

Recently a market extended this concept to front-loaded cases. The solution was a "dummy" back for the case that was placed at the back of the shelf to limit the reach. Now the merchandise is at the front of the shelf, readily visible to the customer and within easy reach for the worker.

At least one vendor has improved this concept by providing a case with a spring-loaded back. When a customer removes an item, the back pushes the remaining items to the front, keeping them within easy reach. The design makes it easier to stock the case by eliminating the need to reach to the back of the case. The stocker puts the first products in at the front of the shelf, then pushes it back to make room for more items. (15)

Grocery Store Occupations with the Largest Number of MSDs, 2001 (3)

| | |
|---|--------------|
| <i>Stock handlers and baggers</i> | <i>4,985</i> |
| <i>Sales counter clerks</i> | <i>3,440</i> |
| <i>Supervisors and proprietors, sales occupations</i> | <i>2,039</i> |
| <i>Kitchen workers, food preparation</i> | <i>1,986</i> |
| <i>Sales workers, other commodities</i> | <i>989</i> |
| <i>Butchers and meat cutters</i> | <i>859</i> |

Employers should consider an MSD to be work-related if an event or exposure in the work environment either caused or contributed to the MSD, or significantly aggravated a pre-existing MSD. For example, when an employee develops carpal tunnel syndrome, the employer needs to look at the hand activity required for the job and the amount of time spent doing the activity. If an employee develops carpal tunnel syndrome, and his or her job requires frequent hand activity, or forceful or sustained awkward hand motions, then the problem may be work-related. If the job requires very little hand activity then the disorder may not be work-related.

Activities outside of the workplace that involve substantial physical demands may also cause or contribute to MSDs. In addition, development of MSDs may be related to genetic causes, gender, age, and other factors. Finally, there is evidence that reports of MSDs may be linked to certain psychosocial factors such as job dissatisfaction, monotonous work and limited job control (7). These guidelines address only physical factors in the workplace that are related to the development of MSDs.

Grocery stores that have implemented injury prevention efforts focusing on ergonomic concerns have reduced work-related injuries and associated workers' compensation costs (5). Fewer injuries can also improve employee morale and reduce employee turnover, encourage new employees to stay longer and discourage senior employees from retiring early. Workplace changes based on ergonomic principles may also lead to increased productivity by eliminating unneeded motions and increasing worker efficiency. Better morale, healthier workers and higher productivity can also contribute to better customer service.

These guidelines present recommendations for changes in the workplace and work practices with the goal of reducing work-related MSDs. Grocery stores can usually meet this goal by changing work methods, equipment, or workstations so they do not exceed the capabilities of their workers. Many changes can be made without significantly increasing costs, and many ergonomic changes result in increased efficiency by reducing the time needed to perform a task. Many grocery stores have already instituted programs that reduce MSDs, reduce workers' compensation costs, and improve efficiency.

Packing produce and other products in ice keeps them fresh and appealing. It also means handling ice – shoveling it, lifting it and shoveling it again. It's heavy work and takes time.

Recently a market devised a method to reduce the amount of time that it takes to put ice on products and that also cut the amount of handling in half. Originally an employee took a cart to the ice machine, scooped up enough ice to fill a cart, wheeled the cart to the display case, and finally scooped the ice from the cart into the display case.

The new machine allows gravity flow of ice and has space underneath for a cart containing four buckets. The ice falls into the buckets and fills them, eliminating half the shoveling. The buckets are convenient to handle and can be picked up to pour the ice into the display case, eliminating the rest of the need to shovel. The net result – less strenuous work, more time saved, and an attractive display (15)

A Process for Protecting Workers

The recommendations below are practices taken from safety programs that grocery stores have developed and that OSHA observed while performing site visits at grocery stores. They are intended to provide a flexible framework that a grocery store manager can adapt to an individual store. In many grocery stores, ergonomics, other employee safety and health efforts, workers' compensation and risk management are integrated into a single program, and are usually administered by the same staff. OSHA recommends that employers develop a process for systematically addressing ergonomics issues in their facilities, and incorporate this process into an overall program to recognize and prevent occupational safety and health hazards.

Store and company management personnel should consider the general steps discussed below when establishing and implementing an ergonomics process. It should be noted, however, that each store will have different needs and limitations that should be considered when identifying and correcting workplace problems. Different stores may implement different types of programs and activities and may assign different staff to accomplish the goals of the ergonomics process.

Provide Management Support

One key to successful ergonomic efforts is management support to lead the efforts. Management support improves the grocery store's ability to maintain a sustained effort, allocate needed resources, and follow up on program implementation. OSHA recommends that employers develop clear goals, assign responsibilities to designated staff members to achieve those goals, ensure that assigned responsibilities are fulfilled, and provide appropriate resources. Meaningful efforts by management also improve employee participation, which is another essential for achieving success.

Management should develop the goals of the ergonomics process, express the company's commitment to achieving them, and determine who will coordinate the ergonomics effort by assigning designated staff members. These staff members implement the activities in the ergonomics process, such as training, worksite and job analysis, exploring alternative ways to perform tasks, and conducting follow-up. The staff members given the ergonomics coordinating duties need to have the authority to address ergonomics issues, access resources, and follow through with implementation.

Lucky Stores reported that they reduced injuries by 55% by implementing a proactive safety program in which ergonomics was a primary component. This program included the following elements:

- *Establishment of safety goals and objectives;*
- *Safety orientation and training for all new hires and transfers;*
- *Monthly safety talks with employees;*
- *Planned weekly inspections;*
- *Improved accident reporting and investigation;*
- *Communication between management staff and injured employees;*
- *Safety coordinators in each store, with hours allocated to safety task; and*
- *Quarterly audits and safety performance reviews. (5)*

(Lucky Stores was purchased by another chain of grocery stores in 1999.)

Involve Employees

Employees are a vital source of information about hazards in their workplace. Employees can add problem-solving capabilities and hazard identification assistance, and their involvement can enhance job satisfaction, motivation, and acceptance of workplace changes. There are many different ways employers can involve employees in their ergonomics efforts. For example, employees can:

- Submit suggestions and concerns;
- Discuss work methods;
- Provide input in the design of workstations, equipment, procedures and training;
- Help evaluate equipment;
- Respond to employee surveys;
- Participate in task groups with responsibility for ergonomics; and
- Participate in developing the grocery store's ergonomics process.

Identify Problems

Identifying where and how a job may exceed the physical capabilities of workers (worksite analysis) is the first step in addressing ergonomic concerns. Worksite analysis involves looking at specific tasks and conditions to identify whether ergonomic risk factors are present and posing a risk of injury to workers. There are a number of ways to look for the ergonomic risk factors that may be present in a job, and which risk factors may cause a risk of injury, such as:

- Analyzing OSHA 300 and 301 injury and illness information, workers' compensation records or employee reports of problems to identify the types of injuries that may have occurred. A detailed analysis is needed to determine the cause of these injuries and the solutions that may be appropriate to prevent future injuries;
- Talking with employees who work in that job;
- Walking through the grocery store to observe employees performing the job, and
- Evaluating what various studies have suggested are risk factors for MSDs.

The ergonomic risk factors grocery stores should look for include:

- Force - the amount of physical effort required to perform a task (such as heavy lifting) or to maintain control of equipment or tools;
- Repetition - performing the same motion or series of motions continually or frequently for an extended period of time;

- Awkward or static postures - include repeated or prolonged reaching, twisting, bending, kneeling, squatting, or working overhead, or holding fixed positions; and
- Contact stress - pressing the body or part of the body against a hard or sharp edge, or using the hand as a hammer.

When there are several risk factors in a job there can be a greater risk of injury. However, the presence of risk factors in a job does not necessarily mean that the job poses a risk of injury. Whether certain work activities put an employee at risk of injury depends on the duration (how long), frequency (how often), and magnitude (how intense) of the employee's exposure to the risk factors in the activity (7). For example, performing cashier work for an extended period of time without a break has been associated with increased hand and wrist problems (8).

The grocery store industry has developed a number of protocols and checklists to assess work activities. For example, Figures 1 and 2 contains checklists grocery stores may use to help identify ergonomics concerns. The checklists include materials developed by the Food Marketing Institute (9) as well as materials developed by OSHA.

Figure 1. - Checklist for Identifying Potential Ergonomics Concerns by Workplace Activity

If the answer to any of the following questions is *yes*, the activity may be a potential source of ergonomic concern, depending on the duration, frequency, and magnitude of the activity. For example, occasionally lifting items into overhead storage areas may not present a problem while doing so frequently may present a problem.

Force in Lifting

- Does the lift require pinching to hold the object?
- Is the lift made with one hand?
- Are very heavy items lifted without the assistance of a mechanical device?
- Are heavy items lifted by bending over or reaching above shoulder height?

Force in Pushing, Pulling, Carrying

- Are dollies, pallet jacks, or other carts difficult to get started?
- Are there cracks in the floor, debris (e.g., broken pallets), or uneven surfaces (e.g., dock plates) that catch the wheels while pushing?
- Is pulling routinely used to move an object?
- Are heavy objects carried manually for a long distance?

Force to use tools

- Are tool handles too narrow or too wide for the employee's hand?
- Do tools require the use of a pinch grip or trigger finger to operate?

Repetitive Tasks

- Are multiple scans needed?
- Is a quick wrist motion used while scanning?
- Are most items lifted rather than slid over the scanner?
- Do repetitive motions last for several hours without a break (e.g., slicing deli meats)?
- Does the job require repeated finger force (e.g., kneading bread, squeezing frosting, using pricing gun)?

Awkward and Static Postures

- Is the back twisted while lifting or holding heavy items?
- Are objects lifted from or into a cramped space?
- Do routine tasks involve leaning, bending over, kneeling or squatting?
- Do routine tasks involve working with the wrists in a bent or twisted position?
- Are routine tasks done with the hands below the waist or above the shoulders?
- Are routine tasks done behind (e.g., pushing items to bagging) or to the sides of the body?
- Are routine tasks performed too far in front of the body?
- Does the job require standing for most of the shift?
- Do employees work with their arms or hands in the same position for long periods of time without changing positions or resting?

Contact Stress

- Are there sharp edges the worker may come into contact with?
- Do employees use their hands as a hammer (e.g., closing containers)?

Figure 2. - Checklist for Identifying Potential Ergonomics Concerns at *Job-Specific Workstations*

If the answer to any of the following questions is *no*, the activity may be a potential source of ergonomic concern, depending on the duration, frequency, and magnitude of the activity. For example, infrequently carrying light items without a cart may not present a problem while frequently carrying heavy items without a cart may present a problem.

Cashiering

- Are items within easy reach?
- Are keyboard supports adjustable?
- Can the cashier work with items at about elbow height?
- Can the display be read without twisting?
- Are all edges smoothed or rounded so the cashier does not come into contact with sharp edges?
- Are objects easily scanned the first time?
- Are the scale, conveyor, and horizontal scanner plates all the same height?
- Is the scanner plate clean and unscratched?
- Does the cashier have an anti-fatigue mat and/or footrest?

Bagging and Carry Out

- Can the bagger adjust the height of the bag stand?
- Are all edges smoothed or rounded so the bagger does not come into contact with sharp edges?
- Do bags have handles?
- Can the bagger put bags into cart without leaning over the checkstand or twisting the back?

Shelf Stocking & Stockrooms

- Are step stools available to reach high shelves?
- Do totes and boxes have handles?
- Are gloves available for handling cold items?

- Are cutter blades sharp?
- Are carts available to move heavy items?
- Are carts or pallet jacks used to keep lifts at waist height?
- Are lightweight pallets used?
- Are box weights within the lifting ability of employees?

Bakery

- Are counter heights and widths appropriate for employees?
- Are carts available to move heavy items?
- Are turntables available for cake decorating?
- Are mixing bowl stands available to raise batter to a comfortable working height?
- Are routine job tasks performed without holding hands/wrists in a bent or twisted position?

Meat Related Tasks

- Are knives kept sharp?
- Are counter heights and widths appropriate for employees?
- Are scales, grinders, slicers, etc. positioned so that the work can be performed at elbow height?
- Are box weights within the lifting ability of employees?

Produce

- Are knives kept sharp?
- Are work tables, etc. positioned so that the work can be performed at elbow height?
- Are carts available to move heavy items?

Implement Solutions

Examples of potential solutions for various concerns are located in the Implementing Solutions section of these guidelines. To implement an effective ergonomics process, grocery store managers may need to modify workstations, purchase equipment, and change work practices. Simple, low cost solutions are often available to solve problems. For example, carts or anti-fatigue mats can be used to reduce risk factors. Employers should consider ergonomic issues when designing new stores or redesigning existing stores. At that time, major changes are easier to implement, and ergonomic design elements can be incorporated at little or no additional cost.

Address Reports of Injuries

Even in establishments with effective safety and health programs, injuries and illnesses may occur. Early reporting, diagnosis, and intervention can limit injury severity, improve the effectiveness of treatment, minimize the likelihood of disability or permanent damage, and reduce workers' compensation claims (10). Many employers have found that early reporting, combined with conservative medical treatment and/or work restrictions, such as temporary light duty, can help employees recover fully without more serious and costly consequences (10, 11, 12). OSHA's injury and illness recording and reporting regulation (29 CFR 1904) requires employers to keep records of work-related injuries and illnesses. These reports can help the retail grocery store identify problem areas and evaluate ergonomic efforts. Employees may not be discriminated against for reporting a work-related injury or illness. [29 U.S.C. 660(c)]

Sometimes the soreness employees experience when starting or returning to a job can be confused with symptoms of MSD overexertion injuries. In most cases soreness from conditioning lasts only a few days. Temporary soreness occurs most often with new employees or people who are returning to a job after several weeks away. When the symptoms linger or gradually get worse, an MSD may be developing. Early reporting and treatment of the symptoms or injury will often lead to complete recovery with the least amount of time away from work and, typically, greatly reduced medical costs.

Provide Training

Training is critical for employers and employees to safely use the solutions identified in these guidelines. Of course, training should be provided in a manner and language that all employees can understand. There are many ways employers can integrate ergonomics training into regular workplace activities, such as new employee orientation or at staff, department, or shift meetings. There are also many sources of training materials, including OSHA, trade associations, and insurance companies. OSHA recommends training for all grocery store employees that provides:

- Knowledge of the work tasks that may lead to pain or injury;
- Understanding of the proper work practices for tasks that employees will be performing;
- The ability to recognize MSDs and their early indications;
- The advantages of addressing early indications of MSDs before serious injury has developed; and
- Awareness of the grocery store's procedures for reporting work-related injuries and illnesses as required by OSHA's injury and illness recording and reporting regulation (29 CFR 1904).

OSHA recommends that staff members who coordinate and direct ergonomics efforts also receive training to give them the knowledge to effectively carry out their responsibilities. These designated staff members will benefit from information and training that will allow them to:

- Appropriately use checklists and other tools to analyze tasks in the grocery store;
- Address problems by selecting proper equipment and work practices;
- Identify the potential benefits of specific workplace changes;
- Help other workers implement solutions; and
- Assess the effectiveness of ergonomics efforts.

Management and supervisory personnel may benefit from training that focuses on general information describing ergonomics, its purpose, common risk factors in grocery stores, common ergonomic solutions, and how to respond to injury reports. Managers will also be interested in potential benefits, including increased efficiency, reduced workers' compensation claims, and improved customer service.

All grocery store employees will also benefit from refresher training to address new developments in the workplace and to reinforce knowledge acquired in the initial training.

Evaluate Progress

OSHA recommends that grocery stores evaluate the effectiveness of their ergonomic efforts and follow-up on unresolved problems. Evaluation and follow-up help sustain continuous improvement in reducing injuries and illnesses, track the effectiveness of specific ergonomic solutions, identify new problems, and show areas where further attention is needed. The same methods that are used to identify ergonomics concerns (such as OSHA 300 and 301 injury and illness information, workers' compensation records, employee interviews, and observation of workplace conditions) can also be used to evaluate progress (11,12).

How often an employer evaluates the program will vary by the size and complexity of the facility. Management should revise the program in response to identified deficiencies and communicate the results of the program evaluation and any program revisions to employees.

Implementing Solutions

The section on ergonomic solutions for grocery stores presents changes to equipment, work practices, and procedures that can reduce MSD injuries, help control costs, and reduce employee turnover. These changes may also increase worker productivity and efficiency because they eliminate inefficient movements and reduce heavy manual work. The first solutions described are those that are applicable to all or most areas of the grocery store. Then, solutions for specific grocery store departments are presented, including:

- Front end (checkout, bagging and carry out);
- Stocking;
- Bakery;
- Meat department; and
- Produce department.

OSHA is not providing specific solutions for every department of every grocery store, but the general recommendations should be useful. OSHA expects that a grocery store may need to implement a variety of solutions to address issues in different areas of the store. However, OSHA does not expect all of the solutions to be used in a single grocery store. The solutions are not intended to be an exhaustive list, and grocery store managers are encouraged to develop innovative ergonomic solutions that are appropriate to their workplace. These are only examples of ergonomic solutions, and individual store managers should try to use these ideas as a starting point as they look for other innovative methods that will meet their store's needs.

Back injuries are a common and expensive problem. One method to reduce back injuries is to reduce the weight that employees have to handle. Stop & Shop Supermarkets switched to lightweight plastic pallets instead of conventional wooden ones. The difference in weight is impressive – 20 pounds for plastic pallets rather than 60 to 70 pounds for wooden ones. Management justified the switch on the basis of reducing workers compensation costs.

According to Stop & Shop, not only were their employees handling less weight, but there were impressive savings in other areas – splinter and puncture wounds decreased as did pallet repair costs. The decision paid off and is working very well for their company. (14)

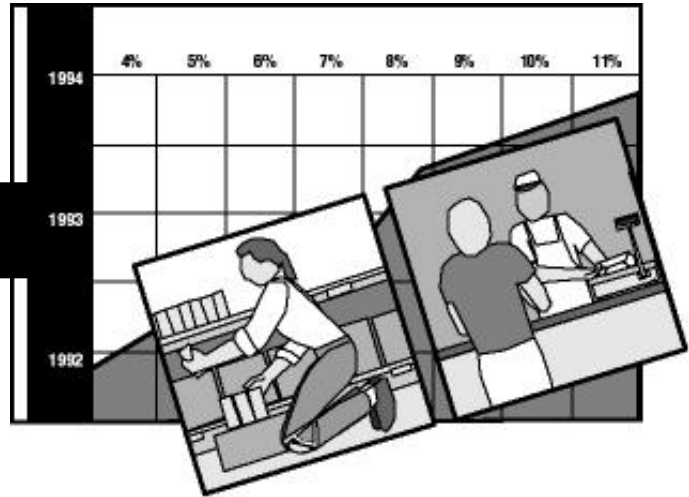
King Kullen Grocery Company reported that they initiated a three-fold approach to effectively manage checkout repetitive motion concerns. First, they initiated training for cashiers, store managers and management personnel. They focused training for checkers on awareness of repetitive motion issues, good work practices, and the value of early injury reporting.

Second, King Kullen changed the design of their checkout stations and scanners. The changes included use of a combined scanner and scale to reduce lifting and twisting arm motions, and locating the scanner directly in front of the cashier to reduce torso twisting. Finally, King Kullen worked to return injured employees to work as quickly as possible. Under their program, a nurse contacts the injured employee within 48 hours of their injury and monitors their care until they return to work.

According to King Kullen, by putting these changes in place, they reduced MSD incidents from 21 in 1992 to 5 in 1996. (13)

STOREWIDE ERGONOMIC SOLUTIONS

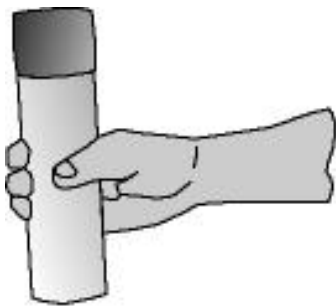
This section describes storewide ergonomic principles that grocery stores can use when building new stores, redesigning workstations and purchasing equipment. Grocery stores can also train their employees on the safe work practices employees can follow to reduce their risk of injury.



Power Grips

A power grip uses the muscles of the hand and forearm effectively, and is less stressful than a pinch grip. Consequently, a one- or two-handed power grip should be used whenever possible.

A power grip can be described as wrapping all the fingers and the thumb around the object that is being gripped. It is sometimes described as making a fist around the object being gripped.

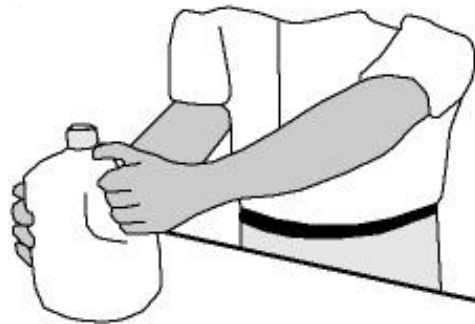


The power grip can be used for many items, including bags, cans and small boxes



Power Lifts

When the item to be grasped is too heavy or bulky to lift with a one-hand power grip, use the two-hand power grip.



Pinch Grips

A pinch grip should never be used when a power grip can be used instead. However, a pinch grip is acceptable for small, light items (e.g., a pack of gum, etc.)



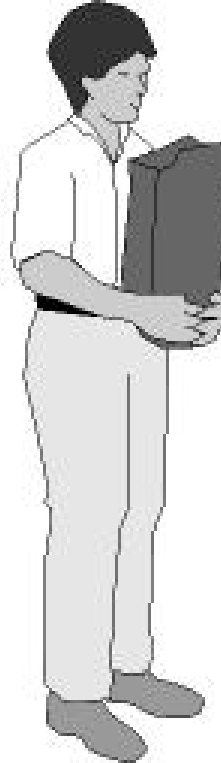
STOREWIDE ERGONOMIC SOLUTIONS

Lifting Safety

Most grocery store jobs involve some lifting. It is important that employers provide employees with help to lift heavy or bulky items. Whether a particular lift will require assistance depends on several factors, including the weight of the object, how frequently the object is lifted, how close the object is to the ground, how high it must be lifted, and how far it must be carried. Assistance can include a dolly or cart, or help from a co-worker. For lighter items, the employer should ensure that employees use good lifting techniques.

When holding, lifting or carrying items

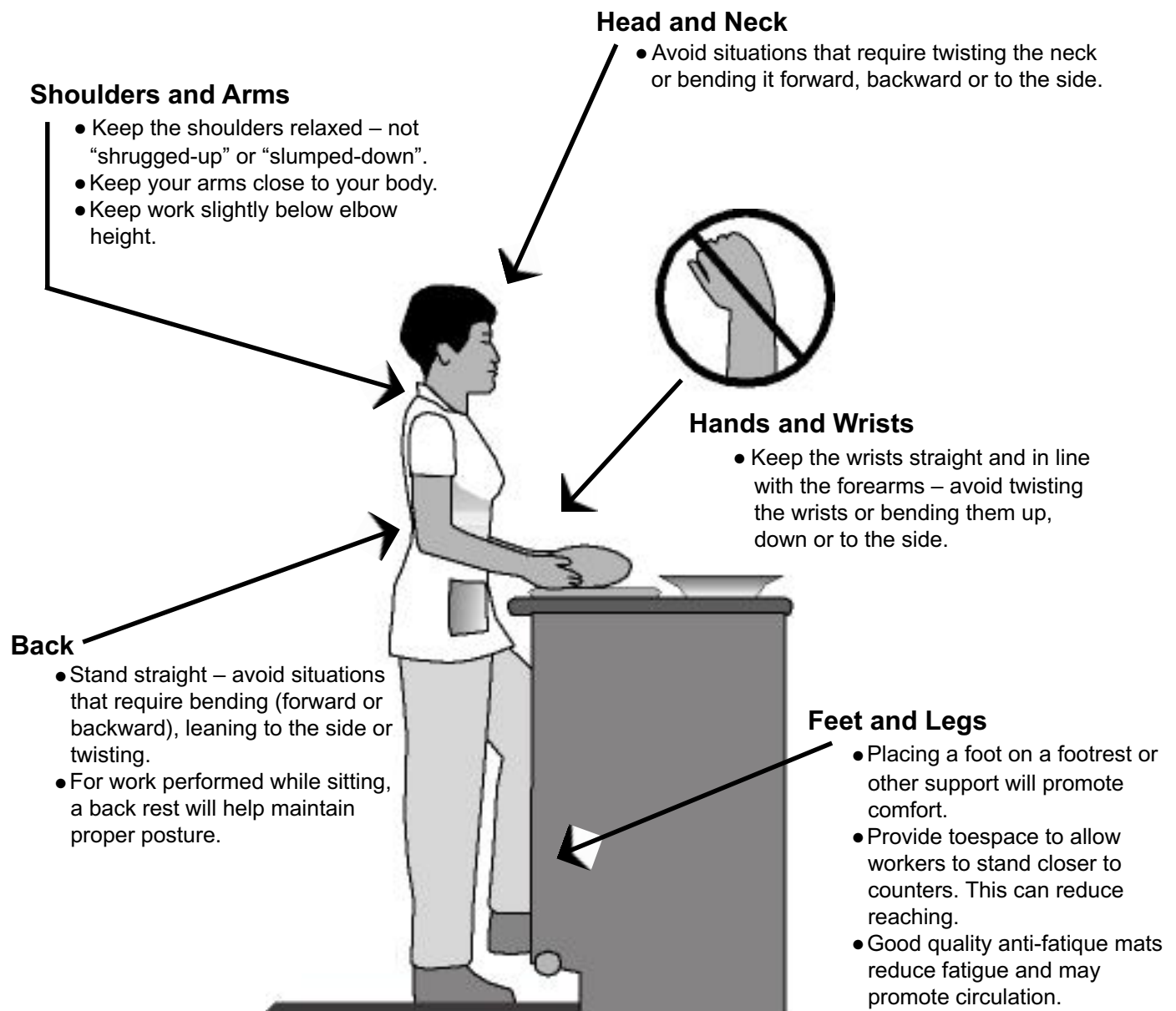
- Before lifting boxes and cases, check to see if the weight is given so you can prepare to lift properly.
- Keep the item close to your body.
- Turn with the feet, not the torso.
- Keep your back straight.
- Use your legs to do the lifting.
- Get close to where you want to set the item down.



STOREWIDE ERGONOMIC SOLUTIONS

Recommended Working Postures

The recommended Working Postures describe body positions that are comfortable and productive. Using postures other than those recommended will generally waste energy and motion as well as potentially raise the risk of injury. It's also important to change position frequently and stretch between tasks. This promotes circulation and lessens fatigue.



STOREWIDE ERGONOMIC SOLUTIONS

Preferred and Acceptable Work Zones

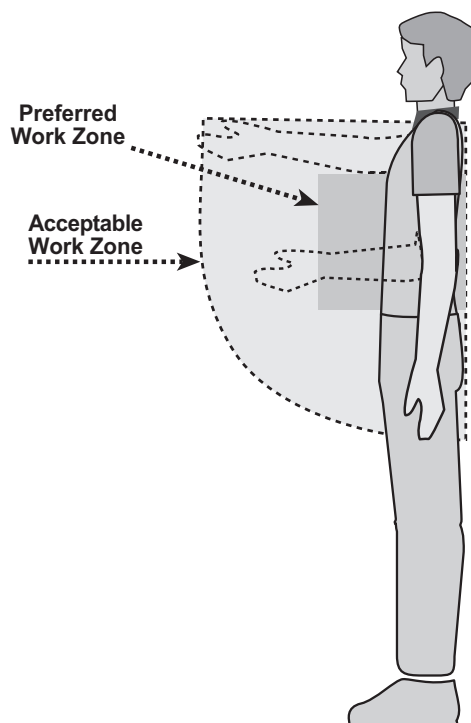
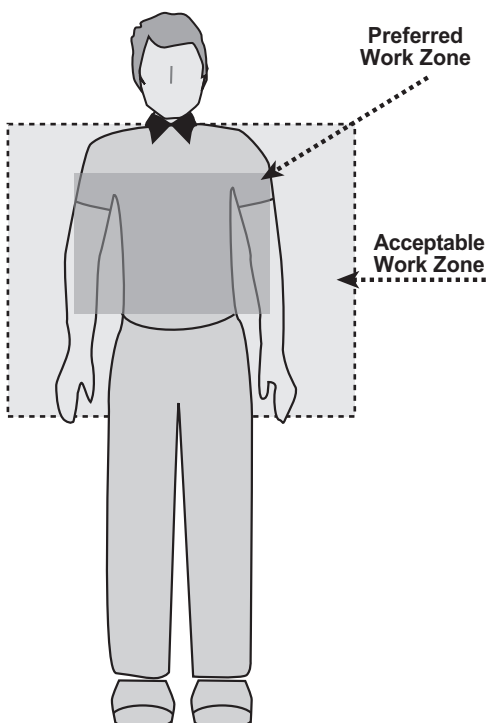
Performing work within the zones shown below facilitates productivity and comfort. Work is safest when lifting and reaching is performed in these zones. Working outside the work zone leads to non-neutral postures that may increase the risk of injury. It is particularly important to perform heavy lifting tasks within the preferred work zone.

Preferred Work Zone

- As far forward as the wrist when the elbow angle is about 90 degrees
- As wide as the shoulders
- Upper level at about heart height
- Lower level at about waist height

Acceptable Work Zone

- As far forward as the fingertips with the arm fully extended
- A foot on either side of the shoulders
- Upper level at shoulder height
- Lower level at tip of fingers with hands held at the side.

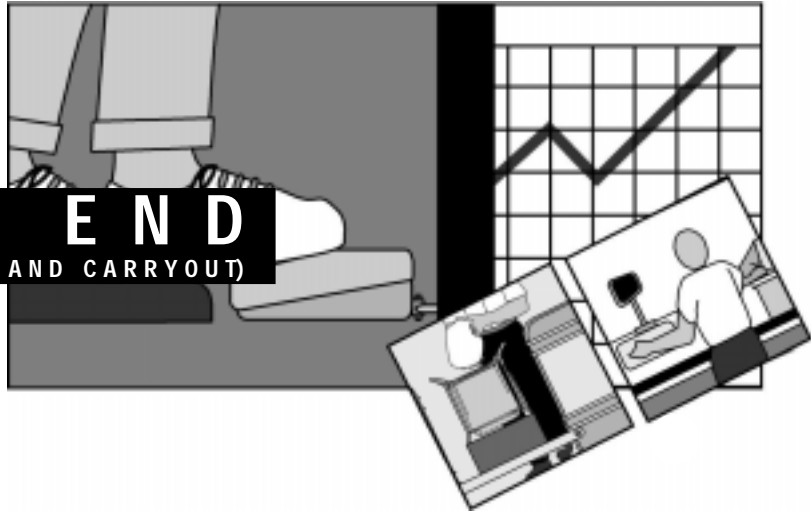


Windshield Wiper Pattern

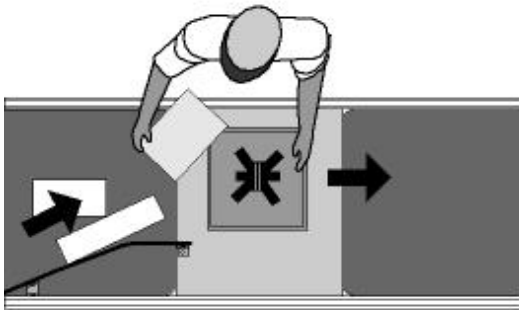
- The arms move in circular patterns, not square ones, so the reach zones are deeper directly in front of a worker and less deep towards the sides.

FRONT END

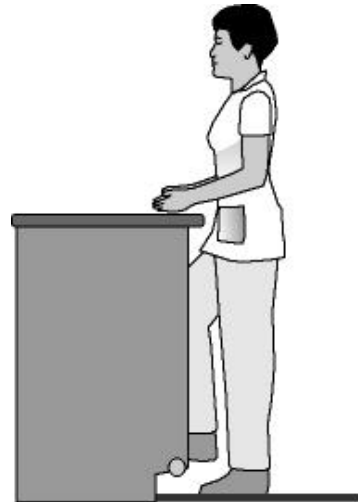
(CHECKOUT, BAGGING AND CARRYOUT)



- Use a powered in-feed conveyor with both a foot and hand switch control to bring items to the cashier. This will help cashiers bring the items to their preferred work zone, rather than leaning and reaching to get items further up the conveyor.
- Use a “sweeper” to move items on the conveyor within the checker’s reach.



- Provide foot rests or rails for cashiers. Alternately resting the feet helps to reduce fatigue.



- Locate commonly used items such as the cash drawer and printer within easy horizontal reach. The top of the cash drawer should be 32-36 inches high.
- Place in-feed and take-away conveyor belts as close as possible to the cashier to minimize reaching.
- Consider using checkstands designed for sit or stand work.
- Consider an adjustable sit/stand or lumbar support against which cashiers can lean.
- Remove, round-off, or pad sharp edges with which the cashier may come into contact.
- Provide adequate toe space (at least 4 inches) at the bottom of the workstation. Toe space allows cashiers to move closer to the checkstand, decreasing the reaching requirements.
- Use footrests and anti-fatigue mats in areas where people stand. Anti-fatigue mats provide a noticeable improvement in comfort over standing on bare floors.
- Place the electronic eye close to the scanner, but allow sufficient area between the eye and the scanner to orient items and to ensure the belt does not push items into the scanning field.
- Keep reaches within the preferred work zones.

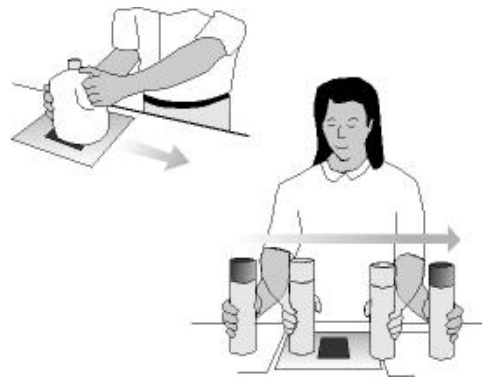
- Use keyboards to enter the quantity of identical products rather than scanning each individual item.
- Use keyboard to enter code if item fails to scan after second attempt.



- Place keyboards on supports that adjust in height, horizontal distance and tilt to keep work within the preferred work zone.
- Use front facing checkstands to reduce twisting motions and extended reaches to the side.



- Adjust the checkstand height to match the cashier's height, or use a platform. Fixed height checkstands (conveyors and scanners) should be about 34-36 inches high.
- Place cash register displays at or slightly below eye level.
- Use scan cards or scan guns for large or bulky items to eliminate the need to handle them



- Set scanners and conveyors at the same height so that cashiers can slide items across rather than lift them.
- Establish a regular maintenance schedule for scanners; clean dirty plates and replace scratched ones.
- Use combined scales/scanners.

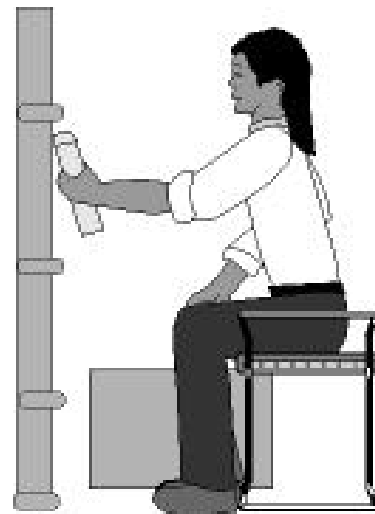


- Provide an adjustable-height bag stand. In bagging areas, the tops of plastic bags should be about elbow level.
- To avoid long reaches when loading bags into carts, move carts closer to the employee.
- Use bags with handles. Handles make the bags easier and less stressful to carry.
- Use carts to carry bags and groceries outside the store.
- Consider using powered-tugs when retrieving carts from the parking area. Powered tugs facilitate moving more carts with more efficiency and less effort.

STOCKING

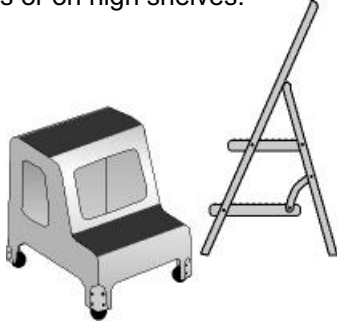


- Keep cases close to the body when lifting and carrying in order to reduce stress to the back.
- Use thermal gloves when stocking frozen foods. Cold temperatures can reduce circulation, causing stress on the hands. If pricing, use a glove with textured fingertips to wipe frost from frozen foods.



- Use a kneeler or stool when working at low shelves for long periods of time. This reduces stress on the knees and legs when squatting and kneeling.
 - Rotate stocking tasks to avoid prolonged kneeling, squatting, and overhead reaching.
 - Use a cart to move items from the pallet to the shelving or case where it is stocked. If possible, the cart should have shelves about 30 inches from the ground to allow workers to handle the case near their knuckle height without bending their backs.
 - Keep cart wheels well maintained. Wheels that are in poor repair are difficult to push. Racks or carts with bad wheels should be removed from service until they can be repaired.
- Use knee pads when stocking low shelves for long periods of time. This reduces the stress on the knees and legs when squatting and kneeling.

- Use a step stool to reach items on the top of pallets or on high shelves.



- Arrange shelves so that heavy items and fast-moving items are stored within easy reach. This reduces the stress on the body caused by bending or reaching overhead.

- Use the correct safety cutter for the job. Be sure to supply a left-handed cutter if the employee is left-handed.

- Keep safety cutters sharp. Using dull tools requires more force. Replace cutter blades often.

- Report pallets that were stacked improperly to the supplier to reduce future problems.

- Ensure that the floor areas are level and free of debris and spills. Report any floor problems that need repair immediately.

- Consider using lightweight plastic pallets rather than wooden ones.

- Use boxes or totes with hand holds.

- Work with suppliers to get lower weight boxes to reduce the weight manually lifted. Industry groups such as the Grocery Manufacturers of America and Food Marketing Institute encourage all companies to use containers and packages of 40 pounds or less. (16)

- Use carts or lift assists to move heavier items.

- Use carts with larger wheels so they are easier to push, and use raised bottom shelves to reduce the amount a worker must bend to lift or place cases.

- Ensure that there is adequate room around carts and pallets for lifting tasks. Workers should be able to walk around the pallet or cart, rather than reaching or bending. Ideally there will be 12-18 inches of clearance around each cart or pallet that is being loaded or unloaded. Larger people may require additional clearance.

- Ensure the work areas are large enough for central processing functions. There must be adequate space for cutting, marking and sorting cases and there must be room to space the carts in each aisle to enable easy loading.

- Equip stockrooms and central processing areas with roller bed conveyors and turntables to reduce lifting and carrying. Maintain turntables so they move easily and with little force required by the worker. Maintain rollers to reduce the pushing and pulling forces needed to handle cases.

- If a turntable is not used, place a flat piece of stainless steel over the end section of the roller bed preferably with a non-stick coating to allow cases to be turned easily. The metal surface should allow the cases to be pushed onto the roller bed easily.

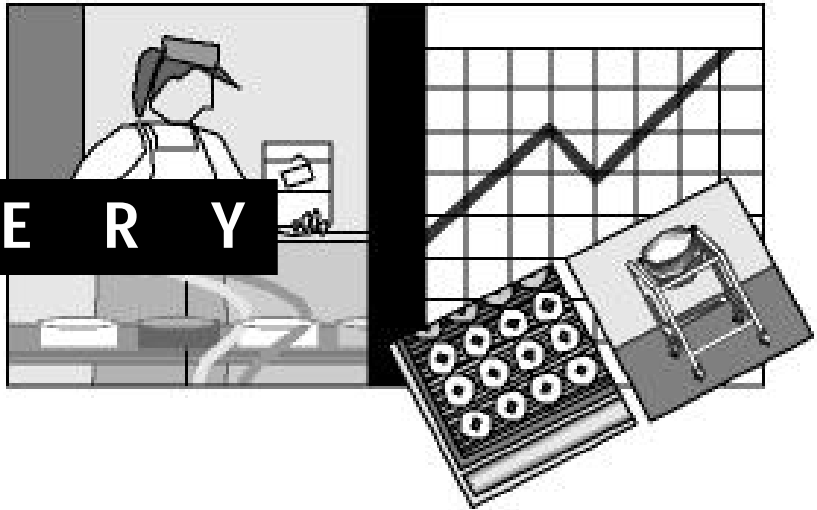


- Use a powered hand jack or scissors-lift to raise the pallet to waist height. This prevents picking up cases with a bent back.

- Work with suppliers to obtain freight with pallet load heights that are within the reach of workers.



B A K E R Y



- Position cake-decorating turntables so that the cake is at about at elbow height for a more comfortable working position. Adjustable height tables are one solution, but you can also put a riser under the turntable, use turntables with different heights, or put in platforms for shorter people to stand on.



- Use small decorating bags whenever possible to reduce the stress on the worker's hands. The larger the bag, the more force required to squeeze it.
- Have an adequate number of mixing bowls available to reduce the need to transfer icing or batters that are mixed in the store to other containers.
- Use footrests and anti-fatigue mats in areas where people stand

- Make sure that there is toe-clearance under counters and other work surfaces.



- Put buckets of icing and batter on risers, e.g., small stands or empty buckets, to raise them to the preferred work zone.
- Use smaller containers of flour, sugar, salt and other supplies to reduce the weights that must be handled.
- When lifting keep large bags and containers of ingredients close to the body to reduce stress on the back.



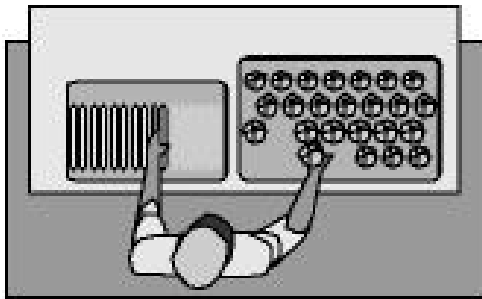
- Use carts or rolling stands to move heavy items like tubs of dough or bags of flour.
- Keep wheels on bakery carts well maintained. Wheels that are in poor repair are difficult to push and should be removed from service until they can be repaired.

These recommendations are based on information from grocery stores. OSHA recognizes that other bakery operations may be different and that other solutions may be more appropriate for those operations.

- Whenever possible, break up continuous activities like cake decorating and dough handling with less strenuous tasks during the shift.

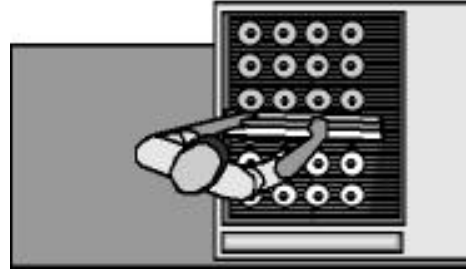


- Use a short-handled scoop to put icing into decorating bags. Shorter handles reduce the stress to the user's wrist.
- Use spatulas, spoons, and other utensils that fit the workers hand (not too wide or too narrow) and are not slippery.
- Work from the long side of baking pans to reduce reaches when handling dough.

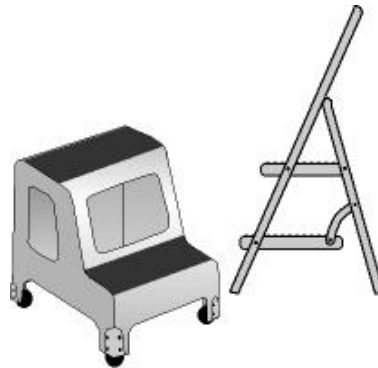


- Use ambidextrous scoops to dispense dough or batter into muffin pans. This allows workers to use either hand when making muffins or cupcakes.
- Use powered mixers whenever possible to mix coloring into icing or purchase colored icing. This reduces the stress to workers' hands and arms from manually mixing colors into icing.
- Ensure that the icing is of correct consistency. Icing that is too thick will be very difficult to squeeze through decorating bags. If icing is mixed in the bakery, add liquid to the recipe or warm the icing to obtain the correct consistency. If icing is purchased in buckets, store the buckets at room temperature or warm them before use – cold icing is very thick and hard to squeeze through decorating bags.
- Consider using cake decorating methods that require less use of manual frosting bags. Using an air brush or mechanical dispenser whenever possible should reduce the stress on workers' hands.

- Whenever possible work from the long side of the donut glazing area to reduce reaches and forces on the back. Some glazing stations can be pulled out so that workers can work from the side.



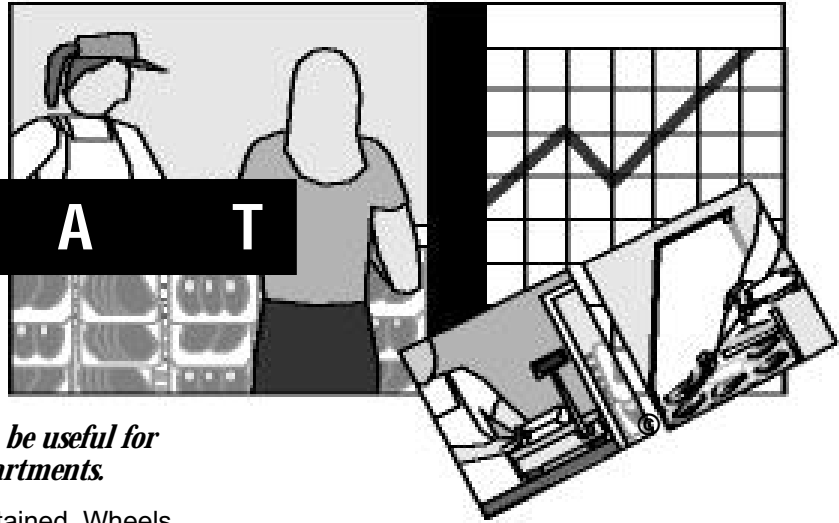
- Use a step stool to reach items on high shelves.



- Look for cases and counter designs that allow the employee to hand customers their selections without high or long reaches.



M E A T



Many of these solutions may also be useful for the deli, seafood, and cheese departments.

- Keep wheels on racks well maintained. Wheels that are in poor repair are difficult to push. Racks with bad wheels should be removed from service until they can be repaired.
- Keep all grinders, cutters and other equipment sharp and in good repair. Dull or improperly working equipment requires more force from the worker to operate.
- Provide thermal gloves for use when handling frozen items.
- Avoid continuous cutting or grinding. Whenever possible, break up these tasks with other, less strenuous tasks throughout the shift.
- Work with suppliers to get meat and other supplies in lower weight boxes to reduce the weight manually handled.
- Keep large boxes and heavy items close to the body. This helps to reduce stress on the back.
- Use a food processor to prepare ingredients for stuffing and other items.
- Arrange the wrapping station so that labels are within easy reach and workers do not have to twist or walk to get to them.
- In manual wrapping stations, ensure that there are no sharp edges that workers can come into contact with while wrapping.
- Mount controls of the roller bed close to the wrap station so that workers can reach it easily. If there are two wrap stations, there should be two sets of controls so that neither worker must pull or lug trays down the conveyor.
- Align the roller bed and the wrap station so that employees can slide the trays rather than lift them to the station.

- If overhead storage is necessary, use it for light items such as foam trays.
- Use a step stool to reach items on high shelves.

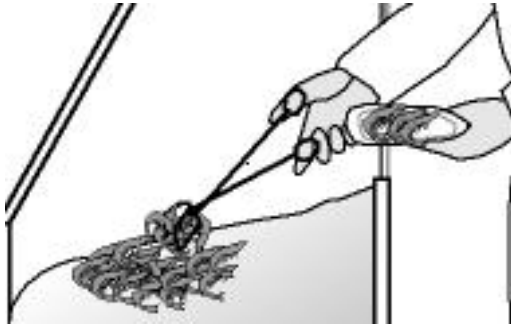


- Position scales so that they can be used in the preferred work zone. Scales that are too high or too low for a worker can contribute to pain or discomfort. If possible, make the scale table adjustable so that all workers can work in comfortable postures. Also, position the scale near the lowest part of the counter so that neither the worker nor the customer has to reach over tall deli cases for meat packages.

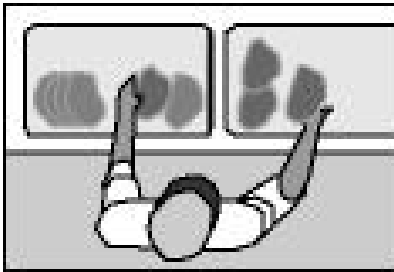


- Provide a small stool for employees to sit on when catching and traying meat from the grinder. Squatting and bending at the waist can lead to back and leg discomfort, especially when grinding for long periods of time.
- Grind meat into a small lug and move it to a comfortable work surface for traying. This prevents the awkward back posture that results from catching and traying the meat immediately as it leaves the grinder.

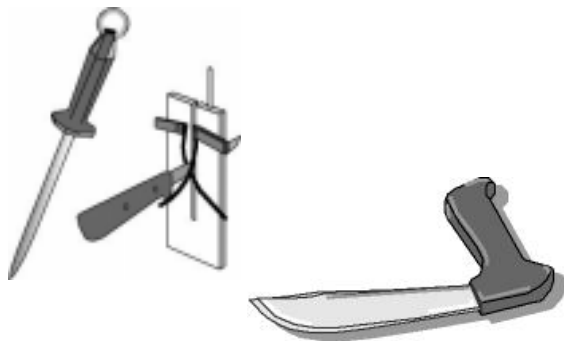
- Use tongs with long handles to reach items in the front of the case.



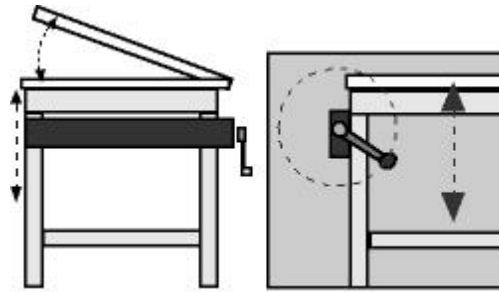
- Whenever possible, work from the long side of trays to reduce reaches and the resultant high stresses on the back.



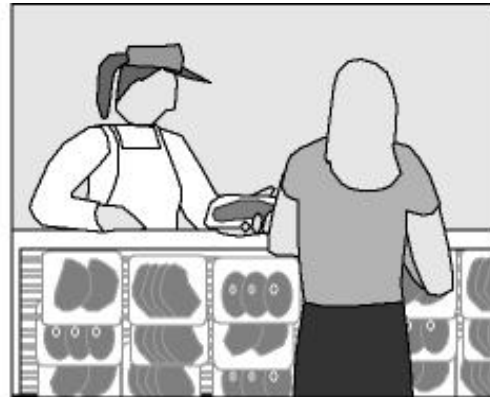
- Keep knives sharp. Workers should be trained in the best knife sharpening methods. Knife sharpening systems should be used regularly, and steels and mousetraps should be used to keep knives sharp throughout the shift.



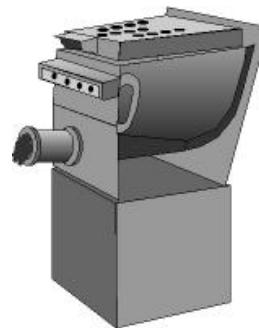
- Try different ergonomic knives to see if they are more comfortable to use. Some designs work well for specific cutting, trimming, or portioning tasks and should be considered “special purpose” tools.
- Whenever possible, incorporate adjustable work surfaces into the department. Examples include cutting tables, scales and deli slicers.



- Look for cases and counters that allow workers to serve customers without long reaches.
- Use anti-fatigue mats, footrests, and sit/stand stools where workers are required to stand for long periods of time.



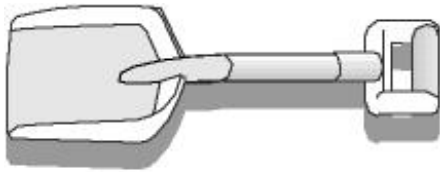
- Look for grinders that do not force the worker to bend over to catch meat or to reach too high to dump meat into the grinder.



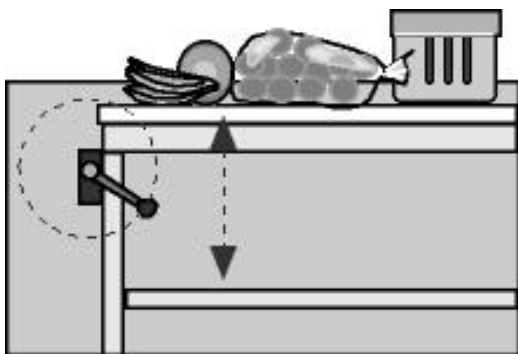
PRODUCE



- Be sure that the manual food processing equipment (knives, slicers, etc.) is kept sharp and in good repair. Equipment that is dull or is not working properly may require excess force to operate.



- Use a lightweight shorthanded plastic shovel for ice. This tool is less stressful to the body than heavy shovels. A small shovel allows the worker to move more ice in less time than a hand scoop.



- Use a portable ice case to transfer ice from the ice machine to the produce displays.

- Position scales and wrap stations so that they can be used in the preferred work zone. Scales that are too high or too low for a worker can contribute to pain or discomfort. If possible, make the scale and wrap station tables adjustable so that all workers can work in comfortable postures.

- Keep boxes, melons, bags of potatoes, or other heavy items close to the body when lifting and carrying. This helps to reduce stress on the back.

- Keep heavy items, such as watermelons, in shipping containers and use pallet jacks to move them.

- Consider using refrigeration rather than ice to cool produce in order to eliminate the need to shovel ice.

- Place heavier or fast-moving items on shelves that are in the preferred work zone.



- Use carts to move heavy items; position carts alongside displays to minimize reaching and carrying.

Additional Sources of Information

The following sources may be useful to those seeking further information about ergonomics and the prevention of work-related musculoskeletal disorders in grocery stores.

Working Smart in the Retail Environment Ergonomics Guide, Food Marketing Institute, (202) 452-8444, http://www.fmi.org/pub/vision_pubs.cfm?prod_id=905. FMI offers (for a fee) several different guidelines and videos, including this document. This guide instructs cashiers and front line managers how to enhance safety, comfort and productivity. The guide also includes a Working Smart Quick Reference, which summarizes the general and specific techniques employees should use and avoid. (1996, 68 pages)

In Search of Better Checkstands, United Food and Commercial Workers International Union, http://www.ufcw.org/issues/internal.cfm?subsection_id=64&internal_id=58. This document provides detailed information on checkstand design, particularly the advantages of grocery scanners that reduce the need for cashiers to grip and lift grocery items across the scanner.

Easy Ergonomics, A Practical Approach for Improving the Workplace; California Department of Industrial Relations, http://www.dir.ca.gov/dosh/dosh_publications/EasErg2.pdf. This document is designed to provide general ergonomics advice, and is not industry specific. The document provides a simple, hands-on approach to ergonomics to help employers, supervisors, and workers as they work toward improving ergonomic conditions in their workplace. (1999, 90 pages)

Elements of Ergonomics Programs, U.S. Department of Health and Human Services – National Institute for Occupational Safety and Health, (800) 356-4674, <http://www.cdc.gov/niosh/ephome2.html>. The basic elements of a workplace program aimed at preventing work-related musculoskeletal disorders are described in this document. It includes a "toolbox," which is a collection of techniques, methods, reference materials, and sources for other information that can help in program development.

Ergonomics for Very Small Business--Retail/Wholesale (Poster); California Department of Industrial Relations, http://www.dir.ca.gov/dosh/dosh_publications/retail.pdf. A poster with examples of safe ergonomic work practices for the very small retail and wholesale employer.

In addition, OSHA's Training Institute in Arlington Heights, Illinois, offers courses on various safety and health topics, including ergonomics. Courses are also offered through Training Institute Education Centers located throughout the country. For a schedule of courses, contact the OSHA Training Institute, 2020 South Arlington

Heights Road, Arlington Heights, Illinois, 60005, (847) 297-4810, or visit OSHA's training resources webpage at www.osha.gov/fso/ote/training/training_resources.html.

There are many states and territories that operate their own occupational safety and health programs under a plan approved by OSHA. Information is available on OSHA's Website at www.osha.gov/fso/osp/index.html on how to contact a state plan directly for information about specific state grocery store initiatives and compliance assistance, or different state standards that may apply to grocery stores.

A free consultation service is available to provide occupational safety and health assistance to businesses. OSHA Consultation is funded primarily by federal OSHA but delivered by the 50 state governments, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands. The states offer the expertise of highly qualified occupational safety and health professionals to employers who request help to establish and maintain a safe and healthful workplace. Developed for small and medium-sized employers in hazardous industries or with hazardous operations, the service is provided at no cost to the employer and is confidential. Information on OSHA Consultation can be found at www.osha.gov/html/consultation.html, or by requesting the booklet *Consultation Services for the Employer* (OSHA 3047) from OSHA's Publications Office at (202) 693-1888.

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- (3) Bureau of Labor Statistics. Special report prepared by BLS for OSHA. Tables of grocery store occupational injuries by occupation, nature, source, event or exposure, and nature of injury or illness, 2001.
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