

Ergonomics for the Food Services Industry Fact Sheet

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For the estimated 12.3 million food service workers in the U.S.,¹ repetitive movements, standing in one place for long periods, awkward postures, or improperly designed workstations and equipment lead to a higher risk of injuries. **Musculoskeletal injuries** -- conditions that affect the body's muscles, joints, tendons, ligaments, and nerves -- accounted for \$124.1 million in paid losses in the food services industry from 2013 to 2017.²

Ergonomics, the process of designing a job to fit the employee, can reduce these costs and make the work safer and more efficient. When implemented as part of a comprehensive workplace program in restaurants and bars, ergonomics also helps reduce absenteeism, increase productivity, and decrease the chance for higher insurance premiums.

For these reasons, employers should establish safety training, best practices, and proper equipment to decrease ergonomic injury risks associated with:

- bending;
- compression or contact stress;
- forceful exertions;
- insufficient rest breaks;



- lifting;
- noise;
- pushing and pulling;
- reaching
- repetitive motions;
- awkward postures;
- static or sustained postures;
- temperature extremes; and
- vibration.

Understanding these risk factors and encouraging wait staff, cooks, food preparation workers, bartenders, dishwashers, and food services managers to practice basic ergonomic principles are the first defense against injury and lost productivity. The good news is there are many ways to prevent job-specific ergonomic injuries from occurring.

Ergonomics for Waitstaff

Waitstaff often carry heavy loads and loose items, such as trays, plates, or beverages to tables. Their job tasks can lead to awkward postures, sprains, strains, and various musculoskeletal injuries, making it nearly impossible to do their job. However, modifications can reduce these injuries.

The human body functions best in comfortable, neutral postures. **Awkward body postures** can increase the stress on ligaments and joints, leading to fatigue, discomfort, and injury. Servers may not feel pain or discomfort when in awkward postures, but the potential for harm remains present. Posture awareness can encourage waitstaff to

move differently and reposition their body to reduce the risk of injury.

Moving or holding a posture requires muscle force. Excessive forces can result in injury. **Excessive forces** are required to lift, lower, carry, push, or pull heavy objects. Even more force is required when waitstaff are in awkward postures for long periods. An example is carrying plates, which places the wrist and fingers in awkward positions while requiring strength to support and balance the load. Another example is carrying coffee pots, water jugs, or full glasses, which places stress on the fingers, wrists, forearms, and shoulders.

Training waitstaff to practice the following safe practices can reduce injury.

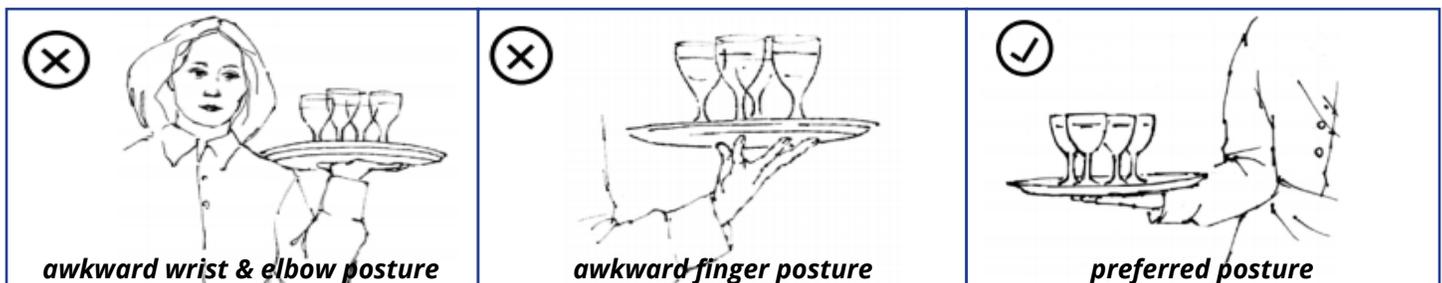
- Support the weight of the tray on both the hand and forearm, not the wrist. When that is not possible, alternate the hand used to carry the tray.
- Carry a tray with a straight wrist and as close to the body as possible.
- Balance the load and place heavy items close to the center. Place plates within the outline of the tray.
- Ensure that the tray is clean and dry to avoid slippage.
- Carry fewer plates and other items at a time. Make two trips or ask other waitstaff to help carry large orders. Require waitstaff to assist others who are carrying trays to parties of three or more.
- Carry plates, coffee pots, and water jugs close to the body.
- When pouring, move the glass or cup as close as possible, rather than overreaching with a full jug.
- Encourage waitstaff to help bus tables, as time permits. A policy of “full hands out, full hands in” to and from the kitchen lightens the load for all.

Ergonomics for Cooks

Restaurant kitchens are often fast-paced, confined environments that force cooks to stand for long periods in almost static positions. Repetitive movements and working in awkward positions can cause discomfort and pain. Kitchen ergonomics -- including the design of the cooking area and employee training to teach efficient movement within the space -- can reduce musculoskeletal injuries among kitchen workers.

Awkward Posture

Hunching over while cooking can cause discomfort and increase the risk of back, neck, shoulder, and arm pain. Designing a kitchen or providing equipment that allows for adjustable workstations or varying countertop heights a few inches below a cook's elbow can improve work ease and efficiency. These additional tips can decrease inflammation in muscles, joints, and tendons often caused by working in an awkward position.



- Use kitchen utensils and equipment with a design that keeps wrists straight, such as grill flippers with bent raised handles and knives with ergonomic grips.
- Adjust work areas to keep elbows as close to the body as possible,
- Move the body closer to the object or move the item closer to the cook. Never reach beyond the point of comfort.
- Store items between knee and shoulder height to avoid over-exerting the torso.
- Work facing the object. Do not twist and reach behind or to the sides of the body.
- Sit on a stool or chair rather than squatting, kneeling, or bending over while working, when possible.
- If the work is too high, lower the work, or raise the worker using a platform, adjustable work surface, or a footstool.
- Keep shelves no higher than the shoulder height of the shortest worker. Provide stepstools if needed.
- Place frequently used items in the most accessible locations.
- Move items or obstacles out of the way to avoid a tripping hazard.

Repetitive Motion

Slicing, dicing, flipping, and preparing food items requires force and repetition. Repetitive motion in the upper arms, elbows, forearms, and wrists for more than ten reps per minute, or in the shoulders more than 2.5 reps per minute, can result in injuries such as tendinitis and carpal tunnel syndrome. Regular hand and arm stretches to improve flexibility and to reduce stress or strain can decrease these injuries, as can the following suggestions.

- Use mechanical or automated devices, such as food processors, potato peeling machines, and electric mixers when possible to reduce upper body strain.
- Sharpen knives regularly. A dull knife may increase the required force by as much as 30%.³
- Alternate working positions and hands used to perform



simple tasks to avoid overusing any single muscle or muscle group.

- Pace the work when performing repetitive motion tasks and try to combine the steps whenever possible.
- Rotate job tasks and take mini breaks as time permits.

Static Postures

After long shifts of standing, cooks can develop ankle swelling, plantar fasciitis, and feet conditions, including Chef's Foot, a type of arthritis of the big toe. These painful conditions can leave cooks injured and out of work for long periods. Injuries associated with static posture – defined as when a body

position is held without movement for more than 30 minutes at a time – are reduced when the following controls are implemented.

- Use anti-fatigue matting to provide a softer surface to stand on and to prevent slips in the kitchen.
- Allow workers to raise a foot onto a footstool to shift body weight and reduce stress on the legs and lower back when standing for long periods.
- Consider sit-stand stools that allow cooks to alternate between sitting and standing positions if spacing does not require them to reach far.
- Choose well-cushioned, closed-toe footwear with anti-slip soles.

Gripping, Pushing, and Pulling

Train employees to use proper body mechanics to decrease over-exertion when handling utensils, pots and pans, kitchen equipment, and other loads. The following modifications can reduce musculoskeletal damage, including tendonitis, De Quervain's syndrome (a painful condition affecting the tendons around the base of the thumb), and other hand, elbow, and shoulder injuries.

- Use a neutral handshake position when gripping items such as pans. A straight-wrist position decreases injury risks and provides maximum strength.
- Avoid reaching below mid-thigh height or above shoulder height.
- Place or store the heaviest items at mid-height to make lifting easier and eliminate lifting heavy objects from the floor. Avoid placing the heavy items on the floor or bottom shelf.
- Avoid lifting or carrying items that are slippery, overly hot, or unevenly balanced.
- Test the weight of loads by pushing the item a few inches on the floor before lifting. Always plan a route before lifting and use the following lifting and moving techniques:
 - o Lift by sucking in the stomach muscles and bending at the knees and hips. Keep the back straight and get close to the object.

- o Install wheels on containers whenever possible to allow employees to use their body weight to push or pull loads, rather than lifting, carrying, or dragging.
- o Make use of available equipment, such as hand trucks, hoists, dollies, or conveyers to reduce heavy workloads.

Ergonomics for Food Preparation Workers

Uniformity is important when it applies to food preparation in a commercial kitchen. Diners expect each customer experience to include food with the same cut, chop, taste, and plating as they experienced before.

Unfortunately, the people preparing that food are not uniform in size and stature. The same countertop that is comfortable for a 5' 6" prep cook can cause a 6' 2" cook to hunch over in pain. The one-height-fits-all set up typically found in commercial kitchens is not ergonomically safe. It often causes neck, back, and shoulder pain among food preparation workers.

Muscle strain resulting from a hunched position and lifting large food containers to and from storerooms can

result in employee absences and worker's compensation claims. According to an [Ergonomics Study of Dining Services Positions](#) conducted by the University of California, food preparation workers were among the most at-risk employees for ergonomic-related injuries, and their injuries were common and often severe.

The physical nature of food preparation work -- awkward positions, physical exertion, heavy lifting, repetitive motions, and standing for long periods -- all increase the chances of employee injuries. However, these steps can reduce the risk of ergonomic-related injuries among food preparation workers:

- Design the kitchen with adjustable workstations or varying countertop heights to improve employee comfort and productivity. When installing countertops at various heights is not feasible, purchase utility carts, worktables, and cutting board risers with adjustable legs to accommodate employees of all heights and sizes.
- Reduce repetitive motions and stress on joints and muscles by:
 - o purchasing pre-cut or pre-peeled



- o foods, when possible;
- o sharpening cutting tools regularly;
- o using powered equipment to mix or stir heavy or viscous foods;
- o using powered can openers of the appropriate size;
- o providing pre-made dough or pre-cut dough pieces, when possible;
- o utilizing automated dough mixers, cutters, and sheeters; and
- o providing anti-fatigue mats for standing.
- Develop vendor contracts requiring that deliveries are:
 - o staged in the storeroom for employees;
 - o restricted to a maximum weight of 50 pounds; and
 - o pre-sorted in designated locations.
- Organize the workflow to decrease the distances and the number of loads lifted and lowered by food preparation workers. This may include but is not limited to using automatic lifters or carts with castors for transporting mixing bowls, liquid containers for dispensing stations, changing fryer oil, transporting food trays, and stocking and retrieving items from the storeroom. Other safety precautions include:

- o selecting shelving specific to the weight of the product stored;
- o storing heavy items between mid-thigh and chest height (the power zone);
- o creating a labeling system to identify heavy items;
- o using beverage dispensers with ice makers attached to reduce transporting ice;
- o purchasing gravity-fed ice machines with totes to reduce scooping and lifting ice; and
- o contracting with a fat, oil, and grease (FOG) removal vendor to safely remove FOG from the fryer to their collection containers OR use an automatic FOG removal machine.

- Teach correct and ergonomic [knife-handling skills](#) when cutting fruit and garnishes. Avoid repetitive cutting tasks and movements which place added stress on muscles, tendons, and ligaments.
- Reduce the chances for broken glass by immediately placing all empty glasses in a rack for washing. When moving a rack of glassware, let the legs bear the load's weight while keeping the back straight and the rack close to the body. Lower the rack by bending the knees and hips, paying close attention to keeping the weight off of the back.

Ergonomics for Bartenders

Safety is often overlooked behind the bar. Since a bartender's primary job is to mix drinks and interact with the customers, bar and restaurant owners often mistakenly believe the worst thing that can happen to a bartender is getting cut on broken glass. However, bartending can result in a variety of musculoskeletal injuries.

Keeping bartenders safe and injury-free is essential not only for the employee but for the bar or restaurant's profitability. When an injured bartender cannot work, regular customers who often have a favorite mixologist may take their business to a competitor. Also, the [possibility of lawsuits](#) can lead to financial losses if the work environment is unsafe.

Create a Safe Work Environment

Creating a safe work environment for bartenders is not difficult or expensive. It begins by implementing a safety training program at orientation and annually that focuses on good ergonomic habits. The training should cover all aspects of the bartender's job and include – but is not limited to – the following tips to help keep employees healthy and injury-free.



- Place anti-fatigue mats on the floor to prevent slips and falls and decrease the stress on the bartender's feet, legs, and back.
- Train employees to pay attention to their posture and stand equally on both feet, using the body's core muscles to move. Encourage them to avoid postures that create unnecessary twisting or hyperextending of the knees when standing or leaning against the bar. If bartenders feel a twinge in the back, neck, or shoulders, encourage them to change the way they are standing. Altering standing positions throughout a shift can keep a minor ailment from becoming a major one.
- Encourage bartenders to wear closed-toe shoes with good traction and extra padding or insole orthotics. Open-toed shoes are unsafe and against [Texas health code regulations](#). If high heels are part of a female bartender's uniform, management is encouraged to change the dress policy to a low-heeled shoe. High heels cause foot and back pain and are unsafe.

Avoid Repetitive Stress Injuries

The constant pouring, shaking, chopping, muddling, and tapping can create a lot of stress on the bartender's tendons and joints. Repetitive stress injuries, such as carpal tunnel syndrome, bursitis, and tendonitis, are common among bartenders who perform the same movement over and over again.

Bartenders can help reduce their risks for injury by knowing the **early symptoms of repetitive stress** -- pain, swelling, tingling, numbness, stiffness, weakness, or heat/cold sensitivity in hands, wrists, elbows, or other areas used repetitively. However, there are ways to prevent repetitive stress injuries.

- Vary the hand used for shaking or pouring to allow the most-often-used muscles and joints to rest.
- Take frequent breaks to allow joints, muscles, and tendons to relax. If frequent breaks are not possible, try switching the order of tasks to avoid repetitive motions.
- Avoid bending the wrist unnecessarily. For example, use the full arm instead of just the wrist when pouring.
- Over-the-counter braces for the back, arms, and wrists can correct posture and reduce injury risk. However, do

not use braces as props to allow bartenders to keep doing harmful behaviors longer.

- Stretch often during a shift and on breaks. Neck shrugs, shoulder stretches, forearm stretches, and torso twists can loosen tense muscles and over-stressed joints.

Proper Keg Lifting

Heavy lifting is one of the leading causes of bartender shoulder, back, and wrist pain. Train bartenders how to properly lift kegs by themselves and as a part of a lifting team.

- Never lift anything heavier than a 30-liter (7.75 gallons or a quarter-barrel) keg alone.
- Get help before lifting any load that the bartender does not think they can manage alone.
- Encourage employees never to lift what they can drag and never drag what they can roll.
- Remind bartenders to remain aware of where their feet are in relation to the load and always think about the relocation path before beginning. The bartender's feet should align on either side of the load and point in the direction of travel.

- Do not allow bartenders to wear scarves, neck chains, or anything that may get caught in the load.
- Never allow bartenders to lift kegs on stairs without the use of carts designed for that purpose.
- Train all employees to get someone to open doors when they are moving loads.
- Encourage bartenders to avoid rotating from the waist with a heavy load.
- Never allow employees to use ladders or stools when lifting heavy objects.
- Review keg-lifting techniques regularly with employees:
 - o get down to the level of the keg with knees bent, back straight, and chin tucked;
 - o get a secure grip on the keg;
 - o pull the keg firmly into full contact with the body; and
 - o reverse the procedure when lowering the load by bending the hips and knees.



Lifting a Keg as Part of a Team

When team-lifting is needed, these techniques can help prevent injuries:

- Choose one person to time and coordinate the lift.
- Ensure each team member is in an optimum position and has enough room to handle the maneuver.
- Align lifters on either side of the keg with feet pointed out from the center of the load.
- Ensure the load is distributed evenly between lifters as they grip the top handle of the keg using their arm closest to the load.
- Tip the keg back slightly in coordination with a

lifting partner and use the arm farthest from the load to grip the bottom of the keg.

- Bend hips and knees, then on a coordinated signal, raise the keg lifting from the knees, keeping the back and the arm under the keg straight.
- When at the proper location, let the arm on top complete the lowering of the load, keeping the back straight and knees bent (if required to lower the load to the floor).
- Remain aware of feet placement and – if either lifter loses a grip – get out of the way and let the keg fall.
- Avoid distractions when lifting.

Ergonomics for Dishwashers



Many of the ways dishwashers work – such as lifting, reaching, or repeating the same movements – may strain their bodies and lead to injuries. Dishwashers, too, come in many different heights, sizes, and physical abilities. Ergonomics helps fit the job duties to the person to help prevent injuries.

As mentioned before, the body functions best in comfortable, neutral postures. Awkward body postures increase the stress on ligaments and joints and lead to fatigue and discomfort. During dishwashing, awkward postures can occur when employees:

- reach above shoulder level;
- reach below knee level;
- reach across deep counters; and
- twist to reach sideways.

Employees may not feel pain or discomfort when in risky postures, but the potential for injury is still present. Encourage dishwashers to be aware of their postures when working, including:

- the height of the work surface;
- where materials are stored;
- space available in the work area;
- the organization of the work area;
- how workers position their bodies; and
- how employees hold objects.

To reduce the risk of injury, practice these tips:

- stand as close to the front of the work surface as possible;
- have employees turn their feet to point at their work to prevent twisting their back;
- when placing glasses into racks, fill the near rows first, then rotate the rack to bring the back rows to the front; and
- have employees lower the rinse nozzle to rest at mid-body height to reduce their reach.

Muscle Force Injuries

Moving or holding a posture requires muscle force. High muscle force – caused during rapid or prolonged muscle contractions – can result in injury. Lifting, lowering, carrying, pushing, or pulling heavy objects, especially in awkward postures, requires high muscle forces. High forces are also required to hold a posture, especially for long periods. To reduce risk of injury, dishwashers should:

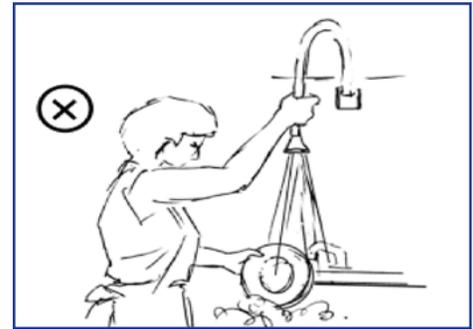
- put one foot on a step or rail – alternating the foot from time to time -- to reduce stress on the back and legs when standing for long periods;

- wear shoes with enough cushioning to relieve the stress on the knees and back when standing for long periods;
- use anti-fatigue matting when standing is required for a long period to reduce the stress on the back, legs, and feet;
- do not overload dish racks or use more than one rack, when possible, to minimize the weight of each rack that must be moved;
- rack heavier items, such as plates, closet to the employee;
- empty and sort cutlery bins before they are full; and
- choose cleaning tools with good grips when heavy-duty cleaning is required.

Repetitive Work Injuries

The same muscles are used over and over again in repetitive work. Repeated forceful movements – especially in awkward postures – increase the risk of injury. To reduce an employee's risk of injury, practice these tips:

- vary the technique to use different muscles, such as alternating between left and right hands;
- vary activities and pace of repetitive tasks by taking a few minutes to do something that uses different muscles; and
- take "micro pauses" to let muscles rest by pausing for five to ten seconds, then return to an upright posture and let arms hang loose by their sides.



Example of awkward shoulder and wrist posture.



Example of improved shoulder and wrist posture.



Example of awkward back, shoulder, and wrist posture.

Ergonomics for Food Services Managers

The Occupational Safety and Health Act's General Duty Clause requires employers to provide "a place of employment...free from recognized hazards that are causing or are likely to cause death or serious physical harm to employees." Restaurant and bar managers and supervisors must recognize their responsibility to identify

and help prevent job-specific ergonomic risks and ways to prevent these hazards. Responsibilities include:

- provide ergonomic training to staff;
- seek employee input into ergonomic problem-solving;
- provide ergonomic

workstations and equipment;

- make ergonomic improvements;
- promote healthy work patterns, such as breaks and job rotation for repetitive tasks;
- encourage employees to report

- musculoskeletal discomfort early;
- ask employees to listen to their body and adjust their tools and workstations to support comfortable and safe postures;
- teach safe lifting techniques;
- encourage employees to vary their job tasks throughout the shift;
- send employees for medical treatment when needed;
- develop work restrictions and job modifications;
- encourage employees to ask for assistance when needed;
- require employees to report work-related injuries to a supervisor promptly;
- make an agreement with workers that employment requires following all work guidelines and restrictions;
- make the training programs for all food service industry employees visible by posting the information in an office or break room for easy review; and
- pay attention to how employees pour, serve, and lift and [correct their movements](#) if it is unsafe.

At the Texas Department of Insurance, Division of Workers' Compensation (DWC)-Workplace Safety, [safety training specialists](#), and [free workplace safety consultants](#) are available to help companies prevent workplace injuries. Healthy employees are essential for business success. [Contact DWC](#) today for ways to improve employee health and workplace environments by calling 512-804-4620, option 2.

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