







All too often, we take the aches and pains of work in a school setting as "just part of the job." Fortunately, that doesn't have to be the case. Researchers and unions have made great strides to improve working conditions by promoting "ergonomics" as an approach to help prevent workplace injuries. Quite simply, this means designing work to meet the needs of workers rather than making workers adapt to dangerous conditions. This simple approach can prevent injuries, disabilities and job loss for thousands of school employees every year. This publication summarizes—by job classification—tasks and activities that can put you at risk for musculoskeletal injuries. It also describes methods you and your union can use to correct hazardous conditions.

The AFT-PSRP Department can provide further information on ergonomics and preventive programs through the AFT-PSRP Occupational Safety and Health Program at 202-393-5674.

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BUS DRIVERS

School bus drivers face a host of ergonomic hazards that can add up to serious trouble. For instance:

Driving a bus is, for most part, sedentary. Prolonged sitting puts an enormous strain on the disks of the spine—they be-



come compressed and are deprived of nutrients and oxygen.

- Drivers are exposed to whole body vibration, which shakes and strains the disks of the spine.
- Seats on school buses are poorly designed and do not provide adequate support.
- Controls on school buses often require the driver to make strenuous movements to operate.
- Design of the controls requires excessive twisting of the upper body and head.
- Manually transferring children with disabilities to and from buses and vans places additional stress on the lower back, shoulders and neck,

The most prevalent musculoskeletal complaint of bus drivers is chronic lower back pain caused by prolonged sitting, vibration, and/or lifting disabled students. Studies of bus drivers have shown that up to 50 percent of them complain of pain, and that lower back pain starts early in a bus driver's career. This pain is a sign that the driver is at risk of developing serious disk problems.

Other musculoskeletal problems also can follow or appear on their own.

- Sciatica. An intense shooting pain from the lower spine down the leg caused by lower back disk compression of a nerve. Poor seats that aren't easily adjustable can add to the risk of sciatica.
 Women drivers are at risk for this ailment because seats are designed for men.
- Neck and Shoulder Injuries.
- Neck and shoulder pain also are a result of

- forceful handling of controls and excessive twisting of neck and shoulders during driving.
- Circulatory Problems. Circulation problems may develop in legs and hands.

Healthy Hints for Bus Drivers

- ➤ Try to become as physically active as possible. Consult your doctor about the best program for you. Aerobic exercise such as walking, swimming and biking can significantly increase the oxygen, water and nutrient supply to your back disks. Exercise will help the disks recover from the restriction of those essential supplies during prolonged sitting.
- ► Stand and do mild stretches whenever you get an opportunity.
- ► Modify the force applied to controls (door, brake, etc.) to take some of the strain off your back.
- ► Try to modify your seat with such things as lumbar pillows to provide support for your lower back.
- ► Always try to get help lifting students and assisting them with their belongings.

FOOD SERVICE WORKERS

There are a number of ways food service workers can sustain musculoskeletal injuries that cause lower back pain. The con-



ditions and work requirements of food service in school settings almost guarantee that food service workers will experience a problem at some point in their careers. Notable hazards include:

Poor equipment layout in many school cafeterias and kitchens. Ovens often are at a low level and their use requires lifting heavy pans from a position lower than the knees. Most kitchen layouts require too much stooping and reaching.

Healthy Hints

for Food Service Workers

- ► When you must stand for long periods of time, use a heavy rubber mat.
- Wear shoes with good support.
- ▶ Whenever possible, alternate periods of standing and sitting to reduce the stress on your back and walk around (without carrying heavy loads) as frequently as you can—this will reduce the compression on your spinal disks.
- ► Store heavy boxes and containers no lower than knuckle height and no higher than shoulder level
 - Holding the same position for long periods of time. Food service workers often must stand on hard floors without an opportunity to move or shift positions.
 - Repetitive use of the arms and hands during preparation and serving of food.
 - Frequent handling of heavy objects, such as commercial cookware, containers of food and boxes.

It's no wonder that food service workers frequently complain of chronic pain. The demands and working conditions can affect every major muscle in the body. Common complaints and injuries include:

- Hip and knee pain associated with standing for long periods of time and with heavy lifting.
- Carpal tunnel syndrome from handling heavy pans of food and from serving food.
- Other hand injuries, such as DeQuervain's Syndrome—a sausage-like swelling of the tendon of the thumb muscles due to a combination of forceful gripping and hard twisting.
- Upper and lower back pain from lifting, twisting and handling heavy loads.
- Neck and shoulder pain.

to avoid lifting from the floor level and working above the shoulders.

- ► As much as possible, reduce the weight of items to be carried. Make more trips with lighter loads (e.g., open cartons and boxes and transfer fewer items).
- ► Push carts (with two hands) instead of pulling them.
- ► Avoid twisting in both the standing and sitting positions.
- ➤ Consult your physician about an aerobics exercise program. Walking, biking and other aerobic exercise can help protect your back.

OFFICE EMPLOYEES

School secretaries know about multitasking and competing demands. Every day they perform a variety of functions—from office work to community relations. Unfortunately, several typical secretarial



tasks pose ergonomic hazards that can lead to strains and sprains.

Computers are the primary source of ergonomic hazards.
Computers are useful tools, but sometimes they are a mixed blessings in a

school office. Not only do computers generally increase work demand, but for most school secretaries, computers are crammed into an already crowded workstation. School districts invest thousands of dollars in valuable computer hardware and software without giving any thought to where the computers will be placed in the office. As a result, computers often are placed on old, nonadjustable desks. Keyboards and monitors often are too high or too low. And many school secretaries must "make do" with old chairs that have little or no back support. Working on a computer also means hours of sitting in the same position.

Other ergonomically risky activities include:

- **1.** extended phone work—cradling the phone between the shoulder and head;
- 2. collating materials while bending over a table;
- 3. using a calculator or typewriter; and
- **4.** lifting boxes or reams of paper.

Carpal Tunnel Syndrome. When secretaries do not keep their wrists in a neutral position while keying, they have an increased risk for developing carpal tunnel syndrome—a painful inflammation of the tendons in the wrists that can lead to nerve damage in the fingers. This damage usually occurs gradually. An early symptom is numbness of the hands and fingers, especially in the morning. Symptoms get progressively worse, with significant pain and weakness in the hands and fingers. Untreated, carpal tunnel can lead to disability.

Chronic Lower Back Pain. Sedentary work puts office workers at risk for chronic lower back pain and back injury.

Shoulder, Arm and Neck Injuries. Secretaries can develop shoulder, arm and neck injuries cradling telephone receivers between their heads and shoulders, copying a document that is placed flat on a table and reaching into overhead storage bins for materials.

Healthy Hints for Office Employees

- ▶ Take frequent breaks from computer work. The National Institute for Occupational Safety and Health recommends that computer users work no more than 45 minutes at a time on a computer before taking a 15 minute break that can be used for doing noncomputer work.
- ► Stand up, stretch and walk around before beginning another sedentary office activity.
- ► At least twice a day, take a few moments to do the hand and finger exercises.
- ► If your computer workstation or desk is not adjustable, try putting the keyboard on your lap or raising your chair so that you are keying with your wrists in a neutral position. If your keyboard tray is

PARAPROFESSIONALS

Paraprofessionals are highly vulnerable to strains and sprains.
Paraprofessionals spend hours on their feet, often bending over the work of small children at tables, desks and computer stations. They also may carry heavy supplies, books and equipment.



The problems are even more pronounced in special education settings where paraprofessionals may have to:

- Lift and handle children in wheelchairs.
- Diaper children with disabilities on the floor or on nonadjustable tables.
- Toilet children with disabilities.
- Transfer children with disabilities to and from buses.
- Cope with children whose behavior can be unpredictable and aggressive.

Several common work-related musculoskeletal

adjustable, keep it in a low position.

- ➤ Try to position your monitor with the top a few inches below a point level with the top of your head.
- ► Keep your feet flat on the floor. If they dangle and don't reach the floor, try using telephone books or other boxes as a foot rest.
- ▶ Use accessories that will improve your comfort such as a document holder that will place hard copy at eye level, a lumbar pillow for back support or a footrest.
- ► Adding machines, calculators and typewriters should be placed on adjustable work surfaces.
- ► When collating materials, try to find a work surface that doesn't require you to bend over to do the job.

Healthy Hints for Paraprofessionals

REGULAR CLASSROOM SETTING

- ➤ Sit with students at tables and desks instead of bending over them.
- ► Alternate between sitting and standing to reduce the strain on the back.
- Monitor computer work by sitting next to students instead of standing over them.
- ► Avoid carrying heavy loads of materials. Hold materials as close to the body as possible.
- ► Store heavy books and materials on shelves at waist level.

SPECIAL EDUCATION SETTING

▶ Use a walking belt with handles on students who must be transferred or lifted to and from wheel chairs. The handles on these belts help you get a

conditions can be associated with the work of paraprofessionals, including:

- Chronic lower back pain
- Shoulder and neck strain
- Tendonitis (inflammation of the tendons) in the arms
- Herniated disks ("slipped" disks)
- Varicose veins
- Leg and hip pains (shooting from the lower back).

Exercise provides some protection for people whose work may cause muscle strain. Walking and other aerobic exercises improve circulation to the back muscles and disks. Consider starting a "walking club" for lunchtime or after-school walks. Stretching and strength exercises also are beneficial. Consult your physician about the best exercise program for you.

safe and secure grip on the student. They also help avoid "under the armpit" lifts (axial lifts) which strain your back and can be very painful for the student.

- ► When handling a student, try to keep the weight of the student close to your body.
- ► Get help when lifting and handling children. Don't attempt to lift children who weigh more than 70 pounds who can't support some of their weight without assistance.
- ▶ Diaper children on tables that are high enough to allow you to stand erect. Avoid diapering on the floor. Lowering and lifting the weight of a child to and from the floor places a huge amount of stress on the back.
- ► Avoid carrying heavy chairs or equipment without assistance.

CUSTODIANS, MAINTENANCE WORKERS AND GROUNDSKEEPERS

Heavy work and lifting are a way of life for many custodial workers, maintenance workers and groundskeepers. Custodial workers and cleaners often push and pull furniture and heavy equipment and move heavy boxes. Women custodial workers often are injured because they use heavy equipment, such as buffers, that were designed for men. Groundskeepers lift heavy bags of fertilizer, soil and salt. Staff members often ride on tractors and mowers that vibrate the spine and musculoskeletal sys-

tem. Twisting, bending and/or lifting while twisting are common movements that strain the musculoskeletal system. These daily activities often are performed several



Healthy hints for Custodians, Maintenance Workers and Groundskeepers

- ▶ Do not overexert yourself. Test the object you're about to lift to see if the load is manageable. If the load is too heavy, get help.
- ► Do not jerk or speed up. Lift in a smooth, controlled manner.
- Bring objects as close to your body as possible.
- ► Avoid lifting heavy items off the floor; when you must do so, get as close to the object as possible and pull the object and/or tilt it towards you before lifting.
- ► Use carts and hydraulic lifting devices when available.
- Avoid lifting and twisting at the same time; pick

times in one day. Several months or years of these activities can spell trouble for the back, arms and shoulders. Most custodians, maintenance workers and groundskeepers learn to live with chronic lower back pain. Many tell horror stories of damaged shoulders and arms that require surgery and rehabilitation.

The list of injuries sustained by these workers often includes:

- Muscle strain
- Ligament and tendon injuries
- Spinal disk degeneration
- Back muscle strains
- Rotator cuff injuries (shoulder injuries)
- Tennis elbow

Work-Related Musculoskeletal Disorders

School employees frequently suffer from work-related musculoskeletal disorders (WMDs) when forced to adapt to poorly designed and worker unfriendly school settings. WMDs are physical problems, such as pain and/or injury of nerves, tendons, muscles and supporting structures of the body. WMDs can

up the load and turn and take a step instead of turning the upper body when unloading heavy items. Pick up the load first, then turn and take a step, instead of turning the upper body.

- Avoid carrying heavy items up and down stairs; you may be unable to grab the rail if you misstep.
- ▶ Don't rely on back belts to protect your back. Research indicates that back belts may give workers a false sense of security that makes them lift more and increase the risk of a back injury. Back belts actually put more force on the lower back during a lift.
- ▶ If possible, arrange your work area so that heavier items are placed on shelves at waist level; lighter items can be stored overhead and at floor level.

result from any of a broad variety of tasks and activities. Examples of high-risk activities include: handling special education students in classrooms and transferring students with disabilities in and out of buses that have not been suitably adapted for that purpose. Work-related musculoskeletal disorders often develop gradually. Workers can perform these activities for months and years symptom-free. Yet their muscles, ligaments, tendons and spinal disks can be slowly wearing away. The early warning symptoms of wear are chronic lower back pain; neck, shoulder and arm pain; and numbness and weakness in the wrists. Workers with these symptoms are at higher risk for back, neck, shoulder injuries and/or carpal tunnel syndrome.

Are You at Risk for a WMD?

To determine whether you are at risk for a workrelated musculoskeletal disorder:

- 1. Fill out the discomfort survey.
- **2.** For a list of activities, movements and postures that may lead to a WMD, see the Ergonomics Risk Factor Checklist.

Do your daily tasks place you at risk for a work-related injury?

School employees are most at risk when work requires:

- ► Heavy lifting;
- Lifting and carrying awkwardly shaped "packages," such as children;
- Twisting and lifting;
- ► Bending;
- Overhead lifting or reaching;
- ➤ Twisting, repetitive or deviating hand motions (tool and keyboard use);
- ► Driving for long periods of time in a vibrating vehicle; and
- Standing or sitting in the same position for long periods of time.

Your Union and Ergonomics

Urge your local to sponsor ergonomic training. Unions often can get assistance from Committees on Occupational Safety and Health (COSH)—groups that are local coalitions of labor unions, health professionals and attorneys, and/or university health and safety programs—to develop training. The ergonomic approach does not merely focus on changing the behavior of the worker (e.g., proper lifting techniques). Its emphasis is on making changes in the physical design of the workplace and modifying work procedures to eliminate work-related musculoskeletal disorders. An ergonomics approach involves:

- Job assessment or analysis to identify risky tasks;
- Introduction of changes or designs that will reduce risk to workers;
- Evaluation of the design to make sure that it is effective.

The ideal ergonomics program has management commitment and worker involvement. But unions and their members can start the ball rolling even when management is reluctant to cooperate.

Getting Started

Form a union committee with representatives from every job classification. The committee could organize activities designed to:

- 1. Educate members about ergonomics hazards and work-related musculoskeletal disorders. Distribute the discomfort survey and evaluate the survey to identify the most common work-related musculoskeletal disorders by job categories. This could help to target priorities. Unions often can get assistance (see list of state COSH offices).
- **2.** Develop an ergonomics checklist for members in order to determine the most common risky activities in each job category.
- **3.** Evaluate records, injury logs and incident reports to track the occurrence of musculoskeletal injuries.
- **4.** Develop low-cost and/or no-cost solutions for the ergonomics hazards you have identified. Some locals have developed short-term, low-cost solutions that members can use until new equipment can be purchased. For instance, some office workers have had students in woodshop classes make footrests from scrap materials.
- **5.** Compile injury records and the discomfort survey results so that union leadership can approach management and ask for a cooperative labormanagement ergonomics initiative. If your local is in an OSHA-plan state (24 states and two territories—see next page), suggest that the school district contact OSHA consultation for help in developing a program. The service is free.
- **6.** Draft health and safety contract language that might prevent injuries. AFT-PSRP locals have drafted language that protects computer users and classroom paraprofessionals.
- 7. In non-bargaining states, draft an ergonomics policy that the leadership can present to the school board and recommend for adoption.

OSHA STATES: Alaska, Arizona, California, Connecticut, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Jersey, New Mexico, New York, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virgin Islands, Virginia, Washington, Wyoming.

NON-OSHA STATES: Alabama, Arkansas, Colorado, Delaware, Florida, Georgia, Guam, Idaho, Illinois, Kansas, Louisiana, Maine, Massachusetts, Missouri, Mississippi, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Texas, West Virginia, Wisconsin.

Ergonomics: It's a Union Issue

In addition to helping to prevent workplace injuries, building awareness about ergonomics is an excellent issue around which to organize and build union membership. The following are examples of what unions can do to promote ergonomics in various PSRP job categories.

- Computer Users. Union PSRP locals can help their members survive the demands of computer use in several ways. Some PSRP locals have been successful at negotiating contract language that provides users with:
- Decent workstations with adjustable keyboard trays;
- Ergonomically designed chairs;
- Training for office workers on safe computer use; and
- Eye exams and corrective lenses.

The Los Angeles College Guild, an AFT affiliate, has negotiated a contract that includes some of the most comprehensive computer ergonomics language in the country. The contract includes the following provisions:

 A joint labor-management technology committee that evaluates new software and guarantees that the end-users have an opportunity to review software before it is purchased.

- Adequate training on new software.
- Good workstations for computer users, including adjustable chairs, keyboard trays and other accessories that provide comfort to computer users.
- Regular eye examinations and free computer glasses, when needed.
- Ergonomics training.
- Adequate breaks for employees required to work multiple hours at a computer.

Contact the AFT Health and Safety Program for sample contract language on comprehensive ergonomics for computer users.

Paraprofessionals. There is much work to be done in the future to improve conditions in schools that lead to musculoskeletal conditions. The United Federation of Teachers in New York City has begun the process by educating paraprofessionals about unsafe postures and activities that put them at risk for back injuries. The union also has provided tips to paraprofessionals for handling children with disabilities. Trainers investigated techniques used in hospitals and nursing homes that might be helpful in a school setting. For instance, they explored the use of transfer or "walking" belts with handles that make it easier to transfer and handle students. The Toledo (Ohio) Federation of Teachers has negotiated contract language about the handling of children. This language has helped reduce injuries. Ultimately, unions must work with school districts to get the best kinds of equipment for assisting children with disabilities and to provide training for paraprofessionals so that the school environment is safe for staff and students alike. In regular classrooms, unions work with school districts to get better seating for employees in primary school settings. For instance, stools with wheels and back support may be useful for paraprofessionals who are monitoring children at desks, tables and computers. Floor mats should be available for paraprofessionals who must stand for long periods of time.

Custodians, maintenance workers and groundskeepers. Back injuries, as well as other work-related musculoskeletal disorders, are rampant among custodial, maintenance and groundsworkers. Unions can help reduce injuries by approaching management and asking for worker involvement in equipment selection and purchases. For instance, groundskeepers should be allowed to "try out" any new tractors or mowers to make sure they have easy-to-use controls, comfortable seating, back support, and do not vibrate excessively. Similarly, custodians should be allowed to evaluate different kinds of floor buffers, vacuum cleaners and other equipment, and to make purchase recommendations.

Food Service Workers. The union may be able to help discover low-cost methods for reducing the strain and stress of working in the school kitchen and cafeteria. For instance, the union may be able to get stools so workers can alternate standing and sitting, as well as getting rubber mats for standing. Perhaps employees can have input on how work can be reorganized so that no one has to stand in the same position for prolonged periods of time or perform duties that are repetitive and/or hazardous. The union can make other recommendations to management.

Bus Drivers. The union also may attempt to get bus driver members involved in developing the specifications for new buses. Drivers know what kinds of controls will reduce stress, and they understand how important a good seat is.

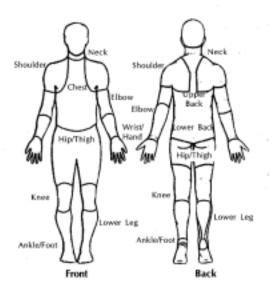
Discomfort Survey

Name:	 _
Job Title:	 _

Think about how you feel RIGHT NOW:

- 1. Shade in all the areas of discomfort on the figure.
- 2. Using the scale on the following page, rate the discomfort for both the left and right side of the body area named in the box at right.

Discomfort Area	Right	Left
Neck		
Shoulder		
Chest		
Elbow/Forearm		
Hand/Wrist		
Hip/Thigh		
Knee		
Lower Leg		
Ankle/Foot		
Other		
Total		



If your score is higher than 20, you should consult your physician or healthcare provider.

Ergonomic Risk Factors Checklist

Do any of the following ergonomic risk factors apply to you? If yes, you may be at risk for a work-related musculoskeletal disorder (strains and sprains). Checked items require action such as changes in equipment or the way you perform your job.

PARAPROFESSIONALS
☐ Working with the back bent forward more than 30° (figure A) for more than 4 hours total per day.
\square Squatting for more than 2 hours per day.
\square Kneeling for more than 2 hours per day
☐ Lifting students weighing more than 75 pounds once per day or more than 55 pounds more than 10 times per day.
CUSTODIANS, MAINTENANCE WORKERS AND GROUNDSKEEPERS
☐ Working with the back bent forward more than 30° (figure A) for more than 4 hours total per day.
☐ Working with the back bent forward more than 45° (figure B) for more than 2 hours total per day.
$\ \square$ Squatting for more than 2 hours per day.
$\ \square$ Kneeling for more than 2 hours per day.
☐ Lifting objects weighing more than 75 pounds once per day or more than 55 pounds more than 10 times per day.
☐ Lifting objects weighing more than 25 pounds above the shoulders, below the knees or at arm's-length more than 25 times a day.
☐ Working with the hands above the head or with elbow above the shoulder more than 2 hours per day (figure C).
☐ Using grinders, sanders, job saws or other hand tools that typically have moderate vibration levels for more than 2 hours total per day.
☐ Riding a mower (whole body vibration) for more than 2 hours per day.
OFFICE EMPLOYEES
☐ Performing intensive keying for more than 4 hours per day.

	Working at a computer on a nonadjustable desk.
	Sitting in a nonadjustable chair with little or no lumbar support.
	Working with the back bent forward more than 30° (figure A) for more than 2 hours total per day (collating or filing).
	Gripping the phone between shoulder and head for more than 2 hours per day.
Bus D	PRIVERS
	Gripping (steering wheel/door controls/emergency brake) with a force of 10 pounds or more, which is a force comparable to clamping light duty auto jumper cables onto a battery, for more than 3 hours per day.
	Lifting objects or students weighing more than 75 pounds once per day or more than 55 pounds more than 10 times per day.
	Driving a bus (whole body vibration) for more than 3 hours per day.
GARA	GE MECHANICS
	Using hand tools that have moderate vibration levels for more than 2 hours total per day.
	Using impact wrenches or other tools that typically have high vibration levels for more than 30 minutes per day.
	Lifting objects weighing more than 25 pounds above the shoulders, below the knees or at arm's-length more than 25 times a day.
	Squatting for more than 2 hours per day.
	Kneeling for more than 2 hours per day.
	Working with the back bent forward more than 30° (figure A) for more than 4 hours total per day.
	Working with the back bent forward more than 45° (figure B) for more than 2 hours total per day.

FOOD SERVICE WORKERS

☐ Lifting objects we once per day or n than 10 times per	nore than 55 pou	-
☐ Lifting objects we above the should arm's-length mor	ers, below the kr	nees or at
☐ Working with the 30° (figure A) for a day.		
☐ Working with the the elbow above t more than 2 hour	the shoulder (fig	
☐ Standing in the sa hour per day.	ame position for	more than 1
☐ Repeating the sar shoulders, elbow no variation more	s, wrists or hand	s with little or
30"	45"	
Figure A	Figure B	Figure C

EXERCISES FOR COMPUTER USERS

Extended computer use may cause muscle strain and tension. Simple stretching exercises may relieve tension and ease pain. Stretching throughout the day may be helpful for office employees who spend hours performing computer work.

Stretching Properly:

- ☐ Stretch to a point where you feel a mild tension and relax as you hold the stretch.
- $\ \square$ Listen to your body as you stretch. It will tell



A Union of Professionals

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