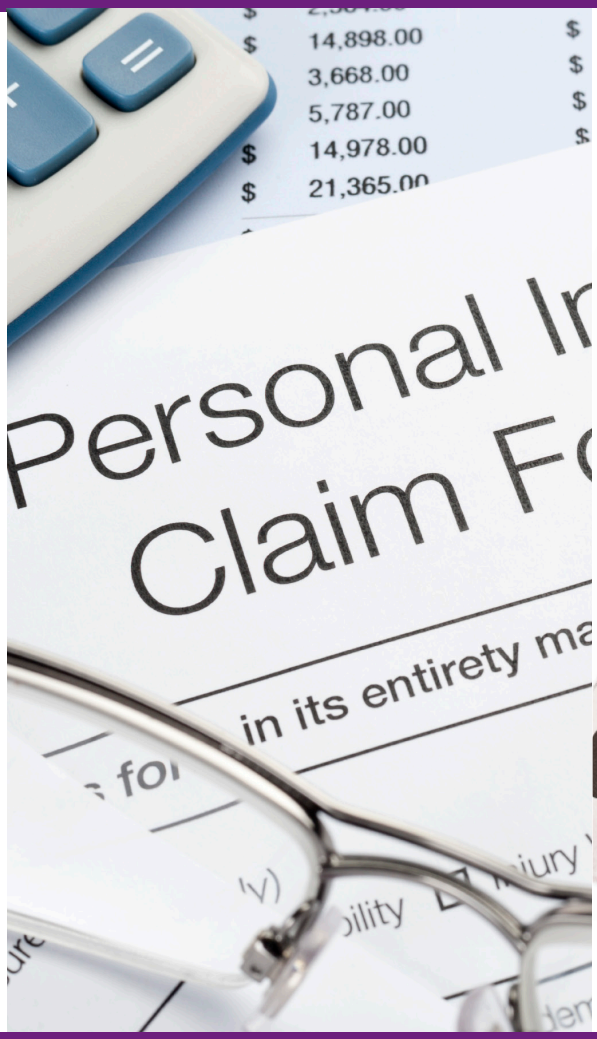
STRAIN INJURY PREVENTION



Third Coast Underwriters

No company, corporation or employee is immune from work-related ergonomic injuries — they're prevalent across industries. However, many businesses have found effective ergonomics programs can reduce operating costs and increase employee morale.

These guidelines provide recommendations for employers to help reduce work-related strains, sprains and other ergonomic disorders in their facilities. They should be viewed as generic in nature, and applicable to all industries. These guidelines are advisory in nature and informative in content and should be used to:

- Help employers reduce the number and severity of work-related strains, sprains and other ergonomic disorders
- Increase employer and employee awareness of ergonomic risk factors
- Eliminate unsafe work practices
- Alleviate muscle fatigue
- Increase productivity

Sprain and Strain

A sprain is medically defined as an injury to ligaments, while a strain is an injury to muscle or tendon tissue.

The medical definition of a strain is damage caused by an overstretched muscle or tendon, causing their fibers to be pulled apart and lose the ability to contract. The severity of injury depends on the amount of tissue damaged — it may be stretched or even torn.

The most common cause of the injury is overuse, which weakens the muscle. Muscles and joints are forced to perform movements for which they are not prepared or designed, and an injury can occur from a single stressful incident, or may gradually arise after repetitious movement. The damage can occur in three areas: the muscle itself, the muscle tendon intersection or the tendon itself. Strains are described by the severity of damage in three grades:

- Grade 1 strains usually cause stretching of a few of the muscle fibers.
- Grade 2 injury is more significant damage.
- Grade 3 injury is a complete rupture of the muscle.

Early indications of strains, sprains and other ergonomic disorders include numbness, tingling, pain, restriction of joint movement or soft tissue swelling. Studies have shown persistent or recurring general shoulder pain (such as rotator cuff tendonitis) is commonly reported by employees. In addition, many employees experience strains and sprains of the low back muscles and associated low back disorders. Moreover, hand-arm vibration syndrome, known as "vibration white finger," is often identified among employees who use vibrating tools.

Some strains and sprains develop gradually over time as a result of intensive work. When the work environment requires employees to assume awkward or static body postures for a prolonged period of time, the employees may be at risk of developing strains, sprains and other ergonomic disorders.

Activities outside the workplace that involve substantial physical demands may also contribute to these issues. They may also be related to genetic causes, gender, age and other factors. Finally, there is evidence that reports of strains, sprains and other ergonomic

disorders may be linked to certain psychosocial factors, such as job dissatisfaction, monotony and limited job control.

These guidelines address only physical risk factors in the workplace. The ergonomics-related risk factors and causes employees are most often exposed to include:

- Force
- Repetition
- Awkward and prolonged static body posture
- Contact stress
- Vibration
- Slip and falls
- Falls from an elevation
- Lifting heavy loads
- Fatigue
- Cold temperatures combined with the risk factors above

The combination of these risk factors in a job can result in a greater risk of injury. However, the presence of risk factors on a job does not necessarily mean the employees will develop strains, sprains and other ergonomic disorders.

For many operations, the number and severity of injuries resulting from physical overexertion, as well as associated costs, may be substantially reduced. It's recommended that employers develop a process for systematically addressing ergonomic issues in their work environments and incorporate this process into their existing safety and health programs. To be most effective, the process should be tailored to an individual's operations.

Safety Staff Role

An employer's safety staff must identify the problem and introduce it, along with a sound Strain Injury Prevention (SIP) program to company management. This can be accomplished by utilizing a trend study to determine the number of cases and total cost of strain injuries annually; strain injuries by department, craft, superintendents, locations, and employee repeat cases.

It is also important to periodically review the job site and the activities of employees to identify possible ergonomic issues. Information about existing problems can be obtained from a variety of sources including analysis of OSHA 300 and 301 injury and illness information, workers' compensation records, and employee reports of problems. In addition, observations of workplace conditions and work processes, job analyses, workplace surveys and employee interviews are important in identifying ergonomics-related risk factors.

The company safety staff must create safety awareness for all employees concerning the SIP. Use of safety signs or banners is a good start. These signs and banners should be conspicuously placed throughout the facility.

The company safety staff should consider forming a SIP Safety Committee to study ergonomic solutions and oversee the implementation of ergonomic controls. The company safety staff or SIP Safety Committee should compile and implement examples of at-risk behavior as it relates to strain injuries. This can be accomplished during workplace surveys or scheduled safety inspections, and includes:

- Table height too low
- Improper lifting techniques
- Lifting too much weight
- Not asking for help
- Not using mechanical equipment to aid in lifting
- Not using gloves or knee pads
- Twisting while holding objects
- Repetitive lifting over a long period of time
- Tripping hazards in walkways where objects are carried
- Jerking on lines or other objects
- Using excessive force on pry bars, come-a-longs, tag lines, etc.

The company safety staff should provide regular feedback (weekly for first four weeks, then bi-

monthly for subsequent months) to management about the implementation of the program — problems, issues or successes and number of cases per month.

To assist in the compiling of data, the company safety staff must conduct extensive incident investigations for reported strain injury cases, such as Root Cause Analysis (RCA). Once investigated, the safety staff must report findings back to management with recommended corrective action to be taken.

Operations Management Role

Management personnel should consider the general steps discussed below when establishing and implementing a Strain Injury Prevention program. It should be noted, however, that each employer will have different needs and limitations that should be considered when identifying and correcting workplace problems. Employers may implement different types of programs and activities and may assign staff from a variety of departments to accomplish the goals of the ergonomics program.

Strong support by management is critical for the overall success of an ergonomics program. It's recommended that employers:

- Develop clear goals and objectives for the ergonomics process
- Discuss them with employees
- Assign responsibilities to the designated staff members to achieve those goals
- Provide feedback to employees

As stated earlier, management must use a team approach that includes the coordination of activities, and the resources necessary to ensure that the objectives of the ergonomics process will be accomplished. These are to include:

- Providing employee training time.
- Establishing a limit on the maximum amount of weight workers should lift. This should be addressed during the employee's pre-hire post-offer physical conducted by the company occupational/industrial clinic medical provider. For example, any object more than 75 pounds will require a mechanical device or two workers.
- Providing and promoting more mechanical devices to use for heavy lifting.

Many employers have successfully integrated more than an ergonomics process into their business, such as pre-planning strategies focused on providing the right material to the right place at the right time in a proper manner. These strategies attempt to eliminate non-value steps in the manufacturing process, such as "wasted walking" or "wasted motion" to pick up parts, tools or equipment. Ergonomics is a good fit with these strategies — ergonomic principles help to identify and control activities that detract from employee performance and may lead to strains, sprains and other ergonomic disorders.

Management should require superintendents and safety staff to discuss strain injury incidents and the corrective action taken to prevent recurrence. Production managers, superintendents, foremen and possibly leadmen must address all at-risk behaviors. The focus should be placed on correcting at-risk behaviors as it relates to strain injury prevention. This should be accomplished during daily toolbox safety meeting talks and weekly or monthly safety meetings.

Management, with the help of the safety staff, must also create a follow-up program to ensure the Strain Injury Prevention (SIP) Program is carried out.

Superintendents/Foremen
For the company SIP program to be effective, superintendents/foremen must correct at-risk behavior and re-direct those employees to follow strain safety rules. The superintendent must be assertive and let the employee or foreman know that SIP is important to you, as a superintendent or foreman, and to the company.

Communication is paramount in letting employees know that they should practice strain safety now to avoid strain problems as workers get older.

Training
Training is an important element of the ergonomics process. Training ensures that employees are informed about ergonomic concerns in the workplace and about ways to minimize the risk of injury. Training is best provided by individuals who have experience with ergonomic issues in the maritime environment. Training should be provided in a manner and language that all employees can understand.

Training prepares employees for active participation in the ergonomics process, including identifying potential problems, implementing solutions and evaluating the process.

Effective training includes:
- Proper use of equipment, tools, and machine controls
- Good work practices, including proper lifting techniques
- Awareness of work tasks that may lead to pain or injury
- Recognition of strains, sprains and other ergonomic disorders and their early indicators
- Addressing early indications of strains, sprains and other ergonomic disorders before serious injury develops; and procedures for reporting work-related injuries and illnesses as required by OSHA's injury and illness recording and reporting regulation (29 CFR 1904).

Employees will benefit from orientation and hands-on training received prior to starting tasks with potential ergonomic risk factors. Employees should also be notified of workplace changes, instructed on using new equipment, and notified of new work procedures.

Safety training videos, handouts and images of strain issues can help enforce safety awareness. If an employer has a BBS (Behavior-Based Safety) Program in place, the use of

positive and negative safety observation cards in employee safety meetings will also help in creating safety awareness among employees. The promotion of off-the-job strain injury prevention can take place through fliers, home mailings, safety talks and other employee reminders.

At a minimum, SIP training of employees should be held twice yearly and be part of quarterly toolbox topics. All managers/supervisors should be trained annually in addition to the employee training twice yearly. SIP training should also be included into new hire orientation training for employees.

Promotion of Program
It is recommended the following be used to help promote the SIP and create safety awareness among employees:

- Wallet cards that illustrate proper lifting techniques, workstation levels and other ergonomic controls
- Hard hat stickers to indicate employees have received strain injury training
- A safety manual and safety rules, created as part of the safety culture

New Hire Medical Screening
Medical screening programs are recommended to determine the physical capability of the individual. It is recommended that an attorney is consulted prior to the implementation of any medical screening program.

Human Resources can assist the SIP by developing and writing employee job descriptions which classify the essential functions of the job position. HR must also match the new employee's physical abilities to the essential functions of the job position.

Addressing Reports of Injuries
This is essential to the success of the ergonomics process. The goal of this effort is to ensure evaluation, diagnosis, and treatment of strains, sprains and or other ergonomic disorders. It focuses employer efforts on preventing strains, sprains and other ergonomic disorders in those specific jobs where injuries occur most often and are most severe. It also provides needed input into the management of the ergonomics process. Integrating health care providers into industry ergonomic efforts promotes employees returning to work more quickly and successfully. As a part of the ergonomics process, addressing the reports of injuries also:

- Reinforces employee training on the recognition of the indications of strains, sprains and other ergonomic disorders and the necessary procedures for reporting potential injuries.
- Encourages employees to report strains, sprains and other ergonomic disorders and potential strains, sprains and other ergonomic disorders early. Early reporting, diagnosis and interventions can limit injury severity, improve effectiveness of treatment, minimize the likelihood of permanent damage, and reduce workers' compensation claims. Federal and state laws prohibit discrimination against employees who report a work-related injury and illness [29 U.S.C. 660(c)].
- Provides prompt medical evaluation, medical care and follow-up care (including rehabilitation services when available).
- Provides guidance on job modifications, restrictions or alternative jobs for injured employees.

Work accommodations and alternative duty tasks will help employees recover faster, so that they can return to their usual job without restrictions and risk of re-injury. Health care providers, who remain knowledgeable about employer operations and work practices by working closely with clients, can assist in conducting periodic, systematic workplace walkthroughs to observe workplace conditions and processes, can effectively identify potential alternative duty jobs and maintain in close contact with the employees.

Evaluating Progress

Procedures and mechanisms to assess the effectiveness of the ergonomics process are important. Evaluation and follow-up are essential to continuous improvement and long-term success. It is recommended that the ergonomics process be regularly evaluated to determine whether ergonomic objectives are met, including after new solutions are implemented. Such evaluations should include input from management, health care providers and employees to review goals, suggest changes in the process and evaluate the effectiveness of ergonomic improvements.

The success of an ergonomics process can be evaluated based on interaction with employees and observations of the work environment, which are likely to be sufficient regardless of the size of employers. Evaluation of more formal processes in larger companies can also include activity and outcome measures used as indicators of process performance. Process evaluations may include direct communication with employees during training sessions, interviews during workplace observations and follow-up medical evaluations as well as an evaluation of all elements of the ergonomics process, as determined by activity measures, such as:

- Average time between employee report of injury, risk factors or other ergonomics-related problem and implementation of appropriate solutions
- Number of jobs analyzed and number of hazards identified
- Number of employees trained
- Number of risk factors reduced or eliminated.

Process evaluations may also include the evaluation of the success in eliminating or reducing exposure to the ergonomic risks factors as determined by outcome measures that may include:

- Number of OSHA recordable strains, sprains and other ergonomic disorders
- Strain, sprain and other ergonomic disorder incidence rate
- Number of workers' compensation claims
- Severity rate of strains, sprains and other ergonomic disorders
- Annual medical cost for strains, sprains and other ergonomic disorders
- Average workers' compensation costs per strain, sprain and other ergonomic disorders
- Number of job transfer requests per trade

The results of process evaluations can be used to change the goals of the process over time. As some goals are achieved, it may be appropriate to focus efforts on other goals that remain.

To assist in your strain/sprain prevention efforts, accompanying this booklet are documents from the U.S. Army Center of Health Promotion and Preventative Medicine that provide real life lifting techniques that you are encouraged to share with your employees. Also, to assist in your ergonomic evaluation efforts, we have included an ergonomic Hazard Checklist and Caution Checklist created by the Washington State Department of Labor, which will give you a great means of evaluating, modifying and measuring your success.