AEU THE AMERICAN EQUITY® UNDERWRITERS, INC.

STRAIN INJURY PREVENTION

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PREFACE

The purpose of this **Strain Injury Prevention (SIP) White Paper** is to provide ALMA members with information on the prevention of strain injuries.

Strain injuries are targeted because of their prevalence in the maritime industry, their high costs in workers' compensation insurance, medical treatment, and rehabilitation, and the high cost of worker turnover and loss of productivity.

The Cost

This document will review the nature of the work and consequent significant cost of strain injuries in the maritime industry. The costs are high for both workers and employers.

For workers:

- Wear and tear on the body
- Painful injuries requiring lengthy treatment
- Loss of earning power due to disability
- Loss of enjoyment of life

For employers:

- Higher insurance costs
- Loss of experienced workers
- Loss of productivity
- Diversion of capital

Due to the nature of the work in the maritime industry and the seemingly increasing number and costs of injuries attributed to strain injuries, it is extremely important to develop and implement a comprehensive plan to address the prevention of strain injuries.

The Injuries

This document will describe strain injuries, essentially those injuries associated with overusing or over-stressing the muscles used in strenuous and repetitive tasks and in cramped and awkward work spaces. A strain injury is damage to muscle tissue caused by overstretching the muscle or tendon, resulting in damage to one of three areas:

- The muscle
- The muscle-tendon intersection
- The tendon

These injuries have several degrees of severity, from minor strains requiring rest and first aid to disabling injuries requiring surgery and long periods of physical therapy and rehabilitation. Consequences range from minor pain and a short period of inactivity to severe pain, interference with all aspects of everyday living, and permanent disability preventing a return to work.

The Causes

This document will identify the causes of strain injuries in the maritime industry. The most common causes are:

- Overuse
- Use of vibrating tools
- Stress from heavy lifting
- Work in awkward or static positions for extended periods
- Long-term wear and tear

The Prevention

This document will identify how strain injuries can be prevented. Many prevention methods are straightforward, common sense measures, but these measures require vigilant and consistent implementation.

Some examples of preventive measures are:

- Properly plan heavy lifts and get help when needed
- Use mechanical lifting devices
- Rest when necessary
- Inspect equipment before use
- Use proper lifting/carrying techniques

Appendix One presents charts which detail industry-specific work causes of strain injuries, the work activity associated with the strain, and recommended preventive action.

This document also recommends a targeted stretch program as a means of raising worker energy levels, improving flexibility and range of motion, interrupting repetitive motions and reducing muscle fatigue.

Appendix Two is a description of a stretching program that targets specific muscle groups.

Related Issues

This document will identify and discuss other issues that contribute to the problem of strain injuries in the maritime industry.

Aging Workforce – The workforce is aging, and older workers are more prone to strain injuries. Loss of strength, vision, hearing, and balance all are associated with an aging workforce and contribute to the increase in the prevalence of strain injuries in older workers. Job tasks and tools may have to be adjusted to the individual and work environments may have to be modified.

Off-the-Job Safety – More injuries occur at home than on the job. Employers should consider off-the-job safety issues to be critical to their management of healthcare and related costs.

Roles and Responsibilities

This document will explain the roles and responsibilities of a comprehensive strain injury prevention program for all levels of management and workers, including safety staff, operations management, superintendents/foremen, and front line workers.

A strain injury prevention program is a critical element of a company's safety efforts. The development and implementation of a plan requires a significant amount of time, money and resources. The program must receive full support at every level of operations.

This document will discuss a necessary awareness campaign through:

- Program promotion
- New hire medical screening
- Reporting injuries
- Return to work programs
- Wellness programs

INTRODUCTION

The maritime industry is associated with heavy labor and intense physical work activity. Workers in the maritime industry are asked to perform a wide range of tasks that over a period start to wear out the physical components of the human body. Lifting, moving dry bulk materials, pulling, tugging on rigging and materials, working in cramped, awkward work spaces and being exposed to the extremes of hot and cold temperatures are just a few of the physical extremes workers are subjected to every day.

Due to the physical nature of the work in the maritime industry, it is not unusual to see injuries associated with overuse or over-stressing the muscles used to perform these jobs. Some injuries appear after a worker has subjected him/herself to long periods of difficult work. Other workers, who may not be physically suited for rigorous work demands, experience acute injuries after working short periods. Additionally, older workers who decide to stay in the workforce due to financial reasons may become injured because of the aging of their bodies.

Strain injuries are extremely painful and often require long periods of time to rehabilitate. These types of injuries have a significant impact on the worker's ability earn a full wage and may cause a disability that could restrict the worker's wage-earning capacity for the remainder of his/her working life.

The cost of strain injuries has a significant impact on the industry as well. Employers whose workers experience a high number of strain injuries will see increases in the cost of workers' compensation insurance as the number of injuries continues to rise. The increase in the cost of workers' compensation comes directly from the company's profit margin. In these lean economic times, profit margins are thin. Therefore, the rise in costs affects the amount of money available to give workers increases in wages and benefits and to invest in capital improvements to help grow the business.

As most employers know, finding and keeping good workers is a never-ending task. Replacing workers who are injured or leave the trade due to not being able to handle the work is difficult. Often workers who replace seasoned professionals do not have the same job experience or physical capabilities as the workers who they replaced.

Taking into consideration the nature of the work in the maritime industry and the seemingly increasing numbers and costs of injuries associated with muscle strains, it is extremely important to develop and implement a comprehensive plan to address and prevent strain injuries.

To protect workers from injuries and assist employers who work in the maritime industry, the Safety Committee of The American Equity Underwriters, Inc. has developed a Strain Injury Prevention (SIP) Program. The SIP addresses the following:

- Description of strain injuries:
    - Physical disabilities caused by strains
    - Cost associated with strain injuries to workers and employers
    - Types of strain injuries
    - Description of the causes of strain injuries (industry-specific)
        - Shipyards
        - Marine Cargo Handling
        - Other
    - Preventive action (industry-specific)
        - Shipyards
        - Marine Cargo Handling
        - Other
    - Roles and responsibilities
        - Safety staff
        - Operations management
        - Superintendents/Foremen
        - Front line workers
    - Ergonomics
    - Training
    - Program visibility and promotion
    - New hire screening
        - Functional capacity testing
        - Job descriptions
        - Essential functions of the job
    - Reporting injuries
    - Return to work programs
    - Wellness programs
    - Off-the-job safety
    - Resources

COSTS ASSOCIATED WITH STRAIN INJURIES

Strain injuries have a significant impact on workers and employers in the maritime industry. Higher insurance costs, higher medical costs, lost productivity through employee turnover, and the inefficiencies of having to hire and train new workers all affect profitability, business expansion, and the lives of injured workers.

Workers who have strain injuries are very likely to lose time on the job. Although the injured worker will receive compensation for the time lost, he/she may be missing out on opportunities to earn extra wages through overtime work. Also, the injury may cause lifelong disabilities that could impact the worker's overall lifestyle.

Strain injuries are many times the most expensive to treat. The cost is influenced by the degree of medical treatment, physical therapy and rehabilitation. These costs are passed on to businesses in the

form of premium increases if the numbers of injuries increase beyond acceptable insurable levels. There are also hidden costs, such as production downtime, that result when the injury occurs. Additionally, companies will need to replace injured workers with inexperienced workers who will require training to be productive, all of which require time and money.

The advantages to the workers and the employers in the maritime industry amply justify the effort expended in preventing strain injuries. It is our intention in this document to point out the costs of these injuries, identify the most common causes, suggest preventive measures, and recommend related activities and programs that will be of benefit in strain injury prevention.

DESCRIPTION OF STRAIN INJURIES

The medical definition of a strain is, "Damage to the muscle tissue caused by overstretching the muscle or tendon, causing its fibers to be pulled apart and lose the ability to contract."

The severity of injury depends upon the amount of tissue that is damaged. It may be stretched or even torn.

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 –** Sensation of cramp or tightness and a slight feeling of pain when the muscles are stretched or contracted.
- **Grade 2 –** Immediate pain which is more severe than the pain of a grade one injury. It is confirmed by pain on stretch and contraction of the muscle. It can be also felt with a ping feeling, like elastic in the muscle.
- **Grade 3 –** There is an immediate burning or stabbing pain and the worker is unable to walk without pain. The muscle is completely torn and there may be a large lump of muscle tissue above a depression where the tear is.

Early indications of strains, sprains and other muscle disorders include numbness, tingling, localized pain, restriction of joint movement, soft tissue swelling, joint stiffness, discoloration and bruising around the strained muscle. After a few days with grade two and three injuries, a large bruise may appear below the injury site caused by the bleeding within the tissues.

PHYSICAL DISABILITIES CAUSED BY STRAINS

Strain injuries have several degrees of severity. Most minor strains can be treated with standard first-aid such as rest and ice application. Treatments for these minor injuries are effective and workers normally are able to conduct full duty operations the next day. However, on the other end of the spectrum, severe strain injuries can be very debilitating.

Severe strain injuries such as ones that require surgical repair are often associated with long periods of rest and rehabilitation. The rest allows the injury to heal to a point when the treating doctor feels physical therapy can begin. Rehabilitation can be long and painful. Physical therapy is necessary to regain full range of motion and needs to begin as soon as the healing process allows.

The therapy involves moving the injured body part through several stages of movement to help restore the original normal pre-injury range of motion. In some cases, overly aggressive therapy can cause the surgery to fail and be repeated.

Some strain injuries are so severe that surgery and physical therapy are not able to bring the injured person back to the levels of physical capabilities before the injury. Severe rotator cuff, knee, and especially back, injuries are examples of this problem.

The severity of the injury may cause permanent disability to the point where normal restoration of motion and use of the injured body part will never return to the pre-injury level. This will have a negative effect on all aspects of the injured person's lifestyle. Normal activities such as sitting in a chair, bending over to tie shoes, and getting dressed become painful activities, frequently requiring assistance.

Ultimately, severe strain injuries that create disabilities may be so debilitating that the injured person will never be able to return to the heavy industry type work that is conducted in the maritime industry. The worker's ability to earn a wage at the level before the injury may be diminished or impossible, therefore having a lifelong effect on the worker's overall ability to earn a wage.

CAUSES OF STRAINS

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. An injury can occur from a single stressful incident, or it may gradually arise after many repetitions of a motion.

In addition, maritime 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 shipyard employees who use vibrating tools.

Some strains 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, strain injuries can result.

CAUSES OF STRAIN INJURIES (INDUSTRY-SPECIFIC)

To help eliminate strain type injuries, it is important to identify leading causes of the injury. Also to bring the injury into closer scrutiny, we must focus on how the injury occurs in specific maritime industry work activities. Posted in Appendix One are charts which detail industry-specific work causes of strain injuries, the work activity associated with the strain, and preventive action.

STRETCHING AND WARM UP PROBLEMS

You may not have thought of it this way, but employees that perform the same tasks day after day are "industrial athletes." They may not exert the same level of effort as a highly conditioned sports athlete, but over the course of time, lesser but more frequent exertion levels can result in similar injuries. Treating your employees like athletes is a mindset that your employees will appreciate and one that will also reduce injuries in the workplace.

The practice of stretching and warming up in the workplace was first practiced in the U.S. in the 80's and was satirized in a variety of movies. It turns out, however, that the companies who first introduced this practice to the U.S. workforce were right on the money. According to the U.S. Department of Labor, strains and sprains account for more than 43% of non-fatal occupational injuries. An organization that is attentive *and responsive* to risk factors that lead to repetitive motion injuries (RMI's) will employ healthier, more productive employees.

The single, most practical way to help condition our industrial athletes is through the implementation of a targeted stretch program. Stretch and flex programs have been shown to:

- Raise workers' energy levels
- Improve flexibility, strength, range of motion, and blood flow to the muscles
- Allow workers to mentally and physically prepare for work
- Interrupt repetitive motion and reduce muscle fatigue

Posted in Appendix Two are examples of stretching exercises that target specific muscle groups. These type of exercises help loosen up and prepare our bodies for the work that needs to be performed each day. Make sure you explain how to conduct each stretch and discuss the benefits of the stretch before asking workers to take part in the exercise.

AGING WORKFORCE

The 76 million "baby boomers" are growing older and our workforce is graying with them. According to the Bureau of Labor Statistics, the proportion of "older" workers (over age 55) will increase steadily from 12% in 2000 to 20% by 2025. The physical changes associated with aging could affect workers and their safety on the job. Employers and employees should prepare for the aging workforce now to ensure that job tasks and worksites remain safe.

Physical changes vary by individual, but as we age, we tend to lose muscle mass and flexibility; a 15-20% decrease in strength by age 60 is typical. Employers should prepare for this by examining work tasks and determining the physical requirements for each job.

Job tasks should not require that employees work at their maximum power repeatedly or over extended periods of time; this can lead to injury to a worker of any age. Altering job tasks and processes and providing assistive devices such as hand trucks, dollies, and hoists can reduce worker effort on the job.

A worker's balance, vision and hearing may also change with age. For example, a worker at age 60 generally requires eight times the amount of light to see as clearly as a 20-year-old. Employers can prepare now by examining the current workplace lighting and upgrading it as necessary. Additional lighting will allow all workers to see their job tasks and each other more clearly. Non-skid flooring, the addition of handrails, and an emphasis on good housekeeping can prevent slips and falls. Communication methods may also need evaluation because verbal commands may be more difficult for an older worker to hear, resulting in hazardous mistakes.

Employees can mitigate the effects of aging by maintaining a healthy diet, exercise, and strength-training program to build muscle and bone mass. Because sleep regulation is more difficult with age, employees should adjust their sleep habits to remain well-rested. Sleep deprivation can cause reduced attention and reaction times, a safety hazard. Older workers need to know that the ability to adapt to temperature changes (thermoregulation) decreases with age. They should be prepared with layers of clothing and close monitoring because heat and cold will affect them faster than when they were younger.

Both employers and employees will need to work together to make sure that the older workers can do the job safely within their physical abilities. Employers should always try to fit the job task and tools to the individual for maximum safety and this is especially important for older workers. Likewise, older employees need to know their limits. If there are job tasks that they can no longer safely perform, they

need to communicate with their supervisors and consider job accommodations to protect themselves and their coworkers.

Does the workplace need a complete overhaul to suit older workers? No, but it is always best to adjust the job tasks and tools to the individual, regardless of age. Good risk management such as job hazard analyses, ergonomics, and wellness programs can maximize safety for older workers as well as their younger counterparts.

OFF-THE-JOB SAFETY

Off-the-job safety is the extension of an organization's on-the-job safety culture. Off-the-job safety programs educate employees about being safe while not at work.

A growing number of businesses now consider off-the-job safety critical to good management of healthcare costs, productivity and profits. More importantly, off-the-job safety programs help save the lives of employees and their families.

IMPACT OF OFF-THE-JOB INJURIES AND DEATHS

U.S. workers are actually safer on the job than in their homes or communities. Home and community deaths are up 74%. According to the 2011 edition of the National Safety Council Injury Facts:

- Nine out of ten deaths occurred off the job
- Nearly three-fourths of medically consulted injuries occurred off the job

The overall risk of unintentional injury deaths has increased in the home and community due to:

- Poisoning (up 13%)
- Falls (up 7%)
- Mechanical suffocation (up 6%)
- Drowning (up 6%)

DIRECT AND INDIRECT COSTS OF OFF THE JOB INJURIES

Unintentional off-the-job worker injuries and deaths cost the nation at least $358.3 billion in 2015. This figure includes lost wages, medical and hospital costs, and administrative expenses associated with insurance.

In 2015, employers lost more than 295 million days of production time due to off-the-job incidents, compared with 65 million lost workdays resulting from workplace injuries.

Future lost production time resulting from off-the-job injuries will total an estimated 545 million days – more than twelve times the 45 million days lost in future years resulting from workplace injuries. These costs are even higher when you add healthcare claims and other benefit costs associated with injuries and deaths to workers' family members.

PREVENTIVE ACTION

Preventing off-the-job injuries is no different than preventing injuries on-the-job. Since most exposures at home are similar to the work setting, merely following good safety practices at home will go a long way in preventing injuries. Posted below are some basic safety tips to remember when working at home.

- Always wear the proper PPE for the job – including eye protection, hearing protection, gloves and steel toed boots – especially around lawn mowers
- Always inspect tools and machinery before use
- Always use tools and equipment properly
- Be aware of loose clothing when working around table saws, and other woodworking or rotating type equipment
- Use the 4-1 rule for ladders and maintain the trunk of your body within the rails of the ladder
- Maintain 3-point contact on ladders at all times
- Always use proper lifting/carrying techniques – get help for heavy loads

SAFETY IS GOOD BUSINESS ON AND OFF THE JOB

Safety doesn't stop when you leave work. Passing that philosophy on to your employees and encouraging them to follow your example creates a sustainable culture of safety. This keeps overall injuries and healthcare costs down, keeps productivity up, and empowers employees to apply best safety practices 24/7, wherever they are.

ROLES AND RESPONSIBILITIES

Similar to any good business plan, a comprehensive strain injury prevention (SIP) program must be developed with the input of all levels of management and front line workers in order to be effective. When stake holders have the opportunity to be involved in the development of a process, they will provide the "hands on" information that is needed to address all the particulars that may not be readily visible to everyone. Also this level of involvement will facilitate acceptance of the program which will ensure compliance. In addition to developing the program, there are several levels of responsibilities that must be met in order to make sure the SIP is sustained and workable.

The following outlines the roles and responsibilities that each level of management and front line workers will need to fulfill in order to ensure the SIP is developed, effective and sustained.

SAFETY STAFF ROLE AND RESPONSIBILITIES

- Introduce and explain the need and deliverables of the SIP program to senior management
- Conduct a trend/cost study to support the need for the program
    - Determine number of cases and total cost of strain injuries annually
    - Strain injuries by yard location and satellite facility
    - Strain injuries by supervisor
    - Strain injuries by department
    - Strain injuries by craft
- Consider forming a committee of all levels of employees to help develop the SIP program, create awareness and facilitate compliance
- Compile examples of at-risk behavior as it relates to strain injuries and work with members of the SIP development committee to find corrective action
    - Table height too low/high
    - Not stretching/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
    - 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.
- Create SIP safety awareness campaigns
    - Provide training on strain injury prevention
    - Post signs or banners and place in conspicuous locations
    - Discuss SIP program activity and progress at safety meetings and safety committee meetings
    - Use digital images of good and bad strain issues; post on employee bulletin boards
- Study "Shipyard Ergonomics" video and accompanying documents, and ship's document
- The safety staff should work with supervisors of each trade to determine back injury/strain hazards associated with each respective task (JSA)
- Focus on back injury/strain prevention controls during safety audits
- Provide regular feedback to workers and management
- Conduct extensive incident investigation for reported strain injury cases
- Promote off-the-job strain injury prevention through flyers, safety talks and other employee reminders
- Promote off-the-job safety.

OPERATIONS MANAGEMENT ROLE AND RESPONSIBILITIES

- Senior Management must approve and support the SIP program
    - Provide resources to support and administer the SIP program
    - Budget sufficient funds as needed to support the SIP program
    - Allow time for employee training
    - Establish a limit on the maximum amount of weight workers should lift
    - Provide and promote use of mechanical devices to use for heavy lifting
- Approve and support a team approach to the development and administration of the SIP program
- Set a goal for a reduction in the number of cases as well as severity of strain injury cases
- Communicate to employees the need and importance of the SIP program during management meetings and meetings with front line workers
- Require and hold responsible all production managers, superintendents, foremen and possibly lead men to comply with the requirements of the established SIP program
- Require superintendents and safety staff to discuss strain injury incidents and suggested corrective action with management
- Create a follow-up program to ensure SIP program is carried out

SUPERINTENDENTS/FOREMEN ROLE AND RESPONSIBILITIES

- Correct observed at-risk behavior and re-direct employees to follow the SIP program
- Be assertive and let employees know the SIP program is important to you as a superintendent or foreman and to the company.
- Superintendents and foremen must communicate to employees that everyone should practice strain injury prevention safety now to avoid strain problems as workers get older.

FRONT LINE WORKERS

- When selected actively participate in the SIP program Development Committee
- Identify and report to supervisors work processes that may subject workers to strain injuries
- Provide assistance in the development of new procedures to eliminate the causes of strain injuries

- Assist and give honest feedback when testing new tools and procedures that are intended to eliminate strain injuries
- Support the SIP program by complying with procedures and rules
- Intervene when observing co-workers performing at-risk behavior that could lead to an injury

ERGONOMICS

What is ergonomics? Ergonomics is the science of matching tools and tasks used in the work environment to the worker. In other words, **ergonomics tries to make your job fit *you,* rather than making you fit *your* job.** The purpose of ergonomics is to reduce or eliminate injuries that can result from work processes that impose stress on muscles, nerves, and joints.

Some strain injuries are the result of cumulative trauma. These injuries usually involve pain and damage to muscles, tendons, and nerves in the back, neck, shoulders, wrists, hands, and elbows. Discomfort can be mild and periodic, or long lasting. Typical ailments include tendonitis, "tennis elbow," trigger finger, and lower back pain.

Cumulative trauma disorders are caused by making the same motion over and over, staying in one position too long, or working in awkward positions. They also occur as a result of working with tools that don't fit the body, using a great deal of physical force, and exposure to long periods of heavy vibration.

Ergonomically-related disorders occur to all types of workers, from laborers to office personnel. You can often help yourself by learning and practicing basic ergonomic principles. There are many ways to reduce or eliminate the disorder; here are a few:

- Consider initiating a pre-shift start-up stretching program to get the body prepared for strenuous work activity
- Use two hands instead of one for a task to reduce excess demand on a single muscle group
- Use tools that are right for the job and proportioned for your body; most tools are made using new ergonomic design to eliminate stress on body parts
- Use power tools instead of manual tools when possible
- Take breaks from repetitive motion tasks
- Avoid repeating awkward movements or holding yourself in awkward positions
- Wear protective gloves that reduce pressure from tool vibration on your fingers
- Change positions and stretch often to improve blood circulation
- Store materials that you will be using often at "knuckle height" to eliminate repeating stooping to pick up parts
- Review permanent work stations to identify possible ergonomic improvements that will eliminate stooping and bending

TRAINING

One of the most important elements of the SIP program is training. Proper training detailing the fundamentals of the program as well asthe roles and responsibilities that employees are expected to follow and be held accountable for is critical to the success of the program. The training must be completed and understood by all employees before the SIP can be initiated. Only after the completion of the needed training can the SIP be successfully implemented, administered and become part of the overall safety process of the company.

If the SIP program is to be sustained, training will not be a one time shot. It must be repeated several times and touch all levels of employees to be effective and influence the safety culture of the workers. The following details the frequency and audience of SIP training:

- Initial roll-out SIP training for all senior management and manager personnel
- Initial roll-out training for all supervisors and front-line workers
- Biannual training for front line workers during safety meeting training
    - Quarterly during tool box/pre-operation safety briefings
- Annually for supervisors and managers in addition to employee training twice yearly
- New hire orientation

PROGRAM PROMOTION

The SIP program is a critical element of the company's efforts to reduce and eliminate strain-related injuries. The development of a comprehensive program requires a significant amount of time, money and resources. Therefore, it is important to take steps to make sure the program receives the necessary attention and promotion to become part of daily operations. Failure to promote, enforce and follow through with the action steps of the SIP program will make it seem unimportant and useless.

The training programs will help employees understand what needs to be done and how to follow the rules. However, it is important to supplement the training with an awareness campaign that keeps the program visible.

The following will help maintain visibility and awareness of the SIP program:

- Distribute wallet cards to illustrate proper lifting techniques, work station set up and other ergonomic controls
- Distribute hard hat stickers to indicate that employees have received SIP training
- Hang banners in areas of the facility where they will receive maximum visibility promoting the SIP program
- Include the SIP in the company safety manual
- Have senior management discuss the progress of the SIP at management and employee meetings
- Consider creating a sub-committee (staffed by both salaried and worker personnel) to help identify promotional materials

NEW HIRE MEDICAL SCREENING

Work activity conducted within the maritime industry is physically demanding and unforgiving. Workers who are not physically able to withstand the rigors of daily work activity may be injured. It is not uncommon to see newly hired workers being injured on the first day on the job due to not having the needed physical capabilities to do the work. Therefore, it is very important to make sure the person hired has the physical capabilities to perform the work he/she was hired to conduct.

Selecting workers who have the physical capabilities to perform the strenuous work activity of the maritime industry is very difficult. The selection process must be fair, non-discriminatory and related to the essential functions of the job. *Therefore, in order to ensure that the process is valid and non-discriminatory, it is strongly recommended that an attorney review and approve the screening process.*

The screening process must have in place valid job descriptions that outline specific elements of the job workers are expected to accomplish, and the percentage of time within a work day an individual would be required to conduct these activities. These elements are considered “essential functions of the job”.

Posted below is additional information to consider for new hire screening:

- Write detailed descriptions for all jobs
- Determine the essential functions of the job
- Medical screening programs are suggested to determine physical capability of the applicant (*We recommend consulting an attorney prior to implementation of any medical screening program.)*
- Match the new employee physical abilities to the essential functions of the job

REPORTING INJURIES

Sometimes when minor injuries occur in the workplace, workers are reluctant to report them to their supervisors. Often the injured person feels that reporting the injury will make them look like a “wimp” or the injury was so insignificant that no one will want to know how it happened. These excuses are unacceptable.

When an injury occurs, no matter how small, it must be reported to a supervisor as soon as possible. Although the injury may appear to be minor, the incident that caused the injury may be much more serious. Often it’s only a matter of inches that separate a minor injury from one that may be life threatening. Also, if the incident is not reported, other workers may be exposed to serious danger from the same situation that caused the minor injury. After the incident is reported, a proper investigation can be conducted to find the cause and develop procedures to eliminate the problem.

Additionally, it’s important to report injuries to be sure proper medical attention is provided. Some injuries, if not treated, may become infected or worse. Therefore, proper treatment from medical personnel may prevent the injury from developing complications.

It is important to treat strain-related injuries as soon as possible. Immediate application of ice/heat along with taking Ibuprofen will help eliminate swelling and inflammation. When the swelling and inflammation are controlled, healing will occur at a faster rate.

Also, it is important to have a medical professional examine the possible strain. The medical professional will be able to determine if the injury can be treated with standard first aid or if the injury will require more advanced care. The medical professional will also be able to determine if physical therapy and light duty are in order.

Remember: report all injuries, big or small. They are all equally important.

RETURN-TO-WORK PROGRAMS

As an employer, a proactive return-to-work program (RTW) can provide you with effective tools associated with injuries or illness by providing the opportunity for injured workers to return to the workplace as soon as it is medically appropriate. A return-to-work program also provides a mechanism for employers to encourage employees to return to work as soon as possible after injury or illness. National statistics indicate that a return-to-work program is a valuable loss control measure that helps control workers' compensation costs.

Recent research from the Workers' Compensation Research Institute illustrates the need to implement an effective return-to-work program. The study shows medical costs and utilization in eight large states – California, Connecticut, Florida, Georgia, Massachusetts, Pennsylvania, Texas, and Wisconsin – for 1996-1998 claims evaluated through mid-1999. Texas had the highest average medical payment per claim for all claims ($2,413), as well as the highest average medical payment per claim for claims with more than seven days of lost time ($7,650). This program focuses primarily on job-related illnesses and injuries. However, employers who focus on return-to-work programs for both occupational and non-occupational disabilities are likely to have more success.

Managing employees with injuries or illness often involves having an understanding of behavioral forces that motivate an employee to be a productive participant in the workforce. The longer an employee is unable to work, the more difficult it becomes for him to return to full-duty employment. Factors such as fear, depletion of financial resources, decline of self-image or self-esteem, and lack of knowledge about the workers' compensation system may present barriers to an employee returning to work. Employees who return to work in a modified or alternate duty capacity are likely to recover more quickly and with less impairment. In addition, these employees are less likely to become treatment dependent.

Posted in the resources section of this document is a copy of a sample return to work program. This sample program provides a step by step illustration of actions to take and document once an injury occurs in managing the process.

WELLNESS PROGRAMS

Escalating healthcare costs continue to remain an issue of great concern for many health professionals, employers and insurance companies. While the United States spends more on healthcare than any other industrialized nation in the world, in many respects its citizens are not the healthiest.

Employees with more risk factors, including being overweight, smoking, and having diabetes, not only cost more to insure, they also pay more for healthcare than individuals with fewer risk factors. To combat this important fact, many employers are now offering some type of workplace wellness program to offset the rising costs of healthcare.

Aside from helping to improve the health of already at-risk employees, workplace wellness programs also have a huge impact on healthy individuals, raising awareness so employees with fewer risk factors remain in a lower cost group.

People spend more waking hours at work than anywhere else, on average 50 hours a week, so it's up to employers to take aggressive action towards implementing workplace wellness programs. Corporate wellness programs play a key role in maintaining and improving employee relations and morale. Bottom line, a healthy, motivated workforce is vitally important to a company as a whole.

WORKPLACE WELLNESS PROGRAMS CAN DO THE FOLLOWING:

- **Reduce Absenteeism:** It has been shown that healthier employees spend fewer days away from work due to illness, saving the company thousands, even millions, of dollars on downtime and temporary employment. Additionally, because good health typically carries over into better family choices, employees could possibly miss less work caring for sick family members.
- **Control Increasing Healthcare Costs:** Today, employers have a vested interest in health-related issues and in reducing unnecessary medical costs that consume corporate profits and employee paychecks. For many companies, medical costs can consume half of corporate profits...or more!

- **Improve Productivity:** While it is not as easily measured as the increase in healthcare costs, improved employee morale and productivity plays a big role in the success of a company or business.
- **Improve Presenteeism:** Presenteeism is a phenomenon occurring when employees are at work but do not feel as productive as usual due to stress, depression, injury or illness.
- **Reduce Injuries:** Healthy employees with fewer risk factors are at a lower risk for injury than those unhealthy employees with more risk factors. Classes are a popular means of trying to prevent injury, including exercise classes, smoking cessation courses, back care programs and stress management lectures. More examples of workplace wellness programs/courses include health education classes, subsidized use of fitness facilities, internal policies that promote healthy behavior and any other activity, policy or environmental change that affect the health of an employee.
- **Improve Employee Morale and Retention:** Employee turnover is expensive and an employee wellness program is an added benefit to encourage employee retention. Company-sponsored workplace wellness programs send a clear message to employees that management values their well-being.

SUMMARY/CONCLUSIONS

The purpose of the Strain Injury Prevention (SIP) Guidance Document is to provide ALMA members information on the prevention of strain injuries are prevalent in the maritime industry. Strain injuries are significantly painful, debilitating, and often leave the worker disabled. The disability may forever change the injured person's lifestyle and ability to earn a wage at the pre-injury level.

Besides the pain and suffering incurred by the injured individual, employers are also negatively affected. Medical costs related to strain injuries are some of the most expensive to treat of all injuries. This high cost has a major effect on the employer's workers' compensation rate. When the costs of injuries increase, workers' compensation insurance rates increase proportionately. In addition to the rising workers' compensation costs, employers are faced with the costs associated with replacing the injured worker, and the downtime created by the injury itself.

Thus, it makes good humanitarian and business sense to initiate a process that addresses the issue. The SIP will assist ALMA member companies to develop a strain injury program that is tailored to their particular needs. Once initiated, the SIP will protect workers from the disabilities associated with strain injuries and will help employers keep good productive workers on the job and reduce overall costs.

RESOURCES/SAMPLE FORMS

Return-to-Work Program – (Sample)

Return-to-Work Program and Internal Claim Management

A) First Aid Visit Injury

1. The facility Medical Representative (MR) or responsible person will treat the injured employee to the best of his/her ability.
2. Depending upon the severity of the injury, the MR will require the injured employee to return before the end of the shift to check the development of the injury. If needed, the MR will provide the injured employee with medical supplies to care for the injury beyond the facility and will discuss steps to be taken should the injury worsen after work hours.
3. On the following workday, the injured employee will be checked by the MR on the development of the injury prior to starting work. The MR will determine whether the employee can go to work or will recommend an alternative course of action if needed.
4. The MR will advise the supervisor if further involvement in monitoring the employee is necessary and to what extent.
5. The MR will maintain records of symptoms, treatment, dates, times, phone calls, and medication rendered during the assessment of injury.
6. If there is any question that the employee's injury may require more extensive medical treatment, then he/she will be immediately referred to company doctor for evaluation and treatment.

B) Injuries Resulting in Medical Treatment and/or Restricted Duty

1. The MR will treat the employee to the best of his/her ability.
2. Should the nature of the injury extend beyond the scope and care of the MR, the MR will:
   a. consult with the Claims Administrator (CA);
   b. Transport and accompany the injured employee to the doctor of choice.
3. If the employee is released to return to "light, modified or restricted duty", then a discussion must take place between the MR, CA, the facility Safety Coordinator (SC), the injured employee, and his/her facility manager to discuss a plan to meet the recommendations set forth by the doctor. The CA must have a clear understanding of the restrictions set forth by the physician, and the prognosis of the injury must indicate an eventual release to full duty. Generally, the prognosis should anticipate a recovery within 6 months to a level of performance acceptable by the company.
4. After approval of the return-to-work plan by the facility Manager, and upon the injured employee's return to work in a restricted or modified capacity, the SC will:
   a. Present to the injured worker a copy of the current Light/Transitional Duty Terms and Conditions;
   b. Discuss with the injured employee his light duty/transitional duty job and hourly pay rate;
   c. Fill-in the injured worker's light duty/transitional duty hourly pay rate on the form, complete the remainder of the form, obtain the injured worker's signature on the form and FAX the form to the CA. (Note: if the employee refuses the offer, the CA should be immediately contacted for further guidance.)
5. The foreman and SC will check on the employee periodically during the work shift to assess the progression of the injury. Any issues noted will be discussed with the facility management.
6. The SC and injured employee will exchange home phone numbers and addresses for the ability to contact one another after hours.

7. The employee will check in with the MR as instructed by the MR on a periodic basis to discuss the current status of the injury. The MR will determine if the injury is healing as expected and recommend to the SC and facility management any necessary changes to the course of action.
8. The MR will send a weekly report on the injury status and work activities of the employee to the facility manager and the CA, who will follow-up with the attending physician regarding the employee's injury and his ultimate ability to return to the regular duties of his usual occupation.
9. This monitoring process will continue until the employee has been released to full duty.

C) Lost Time Accidents

1. The facility MR will treat the injured employee to the best of his/her ability, but where the nature of the injury warrants examination and/or treatment by a healthcare provider, that medical treatment shall be provided to the injured employee by the employer at a medical facility chosen by the employer and the employee. The employee will then be transported to the facility for treatment. Should the employee elect to be examined and/or treated by a healthcare provider of his choice, then the CA shall be immediately notified for proper review and authorization.
2. The facility management will notify the next of kin and, if necessary, assist in arranging transportation of the next of kin to/from the hospital as well as providing for other assistance to the immediate family. In the hospital setting, a member of the facility management team should remain with the family and provide for meals, long distance phone service, and other reasonable expenses.
3. During the initial phase of medical treatment, the facility SC, and in instances where it is appropriate, the CA will accompany the injured employee to the doctor or hospital to assist in the exchange of information and to help family members with any questions or concerns they may have.
4. In instances where it is appropriate, either the CA or a claims representative with the workers' compensation insurer, together with a company representative will communicate with or visit the employee to explain the workers' compensation processes as soon as possible.
5. The SC will contact the HR Department to obtain the employee's mailing address, which will be sent to a member of upper management, who will send a "get well" card to the employee on behalf of the company.
6. The injured employee's immediate supervisor, foreman and/or any other designated management members will visit the employee at home or at the hospital on the same day of the injury.
7. When the employee's injury status enables him/her to return home from a hospital stay, accommodations for living conditions and transportation will be assessed by the CA or by a claims representative with the workers' compensation insurer, or by a medical rehabilitation nurse vendor for rehabilitation purposes.
8. The CA, SC and/or employee's supervisor will call or visit the employee on a regular basis. Small tokens of "good will" can be delivered to the employee during the rehabilitation period.
9. The employee should be encouraged to visit the facility periodically during rehabilitation provided the injury condition permits.
10. Issues or concerns of the employee or family will be immediately communicated to the CA or SC for support.
11. Once the progression of injury allows for a "return to work" status in a light, modified, or restricted capacity, then the process set forth in Section B, Paragraphs 3-9 will be followed until the employee is able to return to the regular duties of his/her usual occupation.

(Company Name)
Restricted Work Form

This form must be completed and returned to the company's Safety Department the same day of medical treatment. The form must be signed by the treating physician and the employee.

Restricted work activity will be assigned by the attending physician and can/will be updated as the injury progresses. No restricted work activity will exceed the work description listed below. Any discrepancy or disagreement of restricted work activity will be referred to the attending physician for conclusion. Refusal to perform assigned restricted work activity can result in the loss of certain benefits.

Please Print!

SECTION 1

Date of Treatment: _____

Employee Name:_____

Time of Treatment: _____

Physician's Name: _____

Injury Type:_____

Estimated Length of Restricted Work: _____

Date for Follow-up Visit:_____

SECTION 2

Physician's Recommended Daily Treatment (i.e. wound cleaning, hot/cold pack therapy, minor exercise therapy, etc.):

_____

_____

_____

_____

_____

_____

SECTION 3

The following are restricted work activity available to accommodate the employee's assigned restrictions. Please check ALL that are applicable to be performed by the employee for 8 hours a day for 5 days until the employee reaches return to full duty status. Breaks will be allowed during the work day both in the morning and afternoon.

[ ] Safety Inspections – requires employee to walk throughout the facility on a daily basis performing the following:
   1. Identifying and documenting unsafe conditions as directed by the Safety Department.
   2. Fire extinguisher monthly inspections (lifting 5–10 lbs.)
   3. Hand tool inspections (lifting 5-10lbs.)
   4. Equipment/vehicle inspections (no climbing/no lifting)

[ ] Hand Painting – requires employee to carry up to a gallon of paint (less than 10 lbs.) and use a roller or brush to paint various structures such as rails, equipment, color coding pipes, walls, signs, etc. in areas not requiring climbing.

[ ] Sweeping – requires employee to use a push broom or regular broom (both weigh less than 5 lbs) to sweep shops and offices. Employee will need to bend at the waist or stoop down periodically (less than 20 times a day) to collect the sweeping and dispose of them in a trash receptacle.

[ ] Tool Room Attendant – requires employee to dispense small hand tools (5-20 lbs.) and materials (5-20lbs.) to other employees on an as-needed basis. Employee will need to walk, bend at the waist, reach, and hold materials (less than 20 lbs).

[ ] Minor Maintenance – requires employee to repair small hand tools (5-20 lbs.) at various locations inside the facility. Employee will need to walk, bend at the waist, reach, and hold materials (less than 20 lbs).

[ ] Counting Inventory – requires employee to count and organize various materials throughout the facility. Employee will need to walk, bend at the waist, reach, and hold materials (less than 20 lbs).

[ ] Sedentary Work – requires employee to perform assorted clerical functions, such as filing, reviewing safety videos, updating MSDS, performing minor janitorial work in the office, etc. Employee will need to walk, bend at the waist, reach, and hold materials (less than 20 lbs).

SECTION 4

Signatures

_____

Attending Physician

_____

Employee

TYPES OF STRAINS

Strain injuries can affect every muscle and joint in the human body. Some of the most common types of strains are:

Achilles Tendonitis

Achilles Tendonitis (AT) causes inflammation and degeneration of the Achilles tendon. The Achilles tendon is the large tendon located in the back of the leg that inserts into the heel. The pain caused by AT can develop gradually without a history of trauma. The pain can be shooting pain, burning pain, or even an extremely piercing pain. Achilles Tendonitis should not be left untreated due to the danger that the tendon can become weak or ruptured.

Achilles Tendonitis is aggravated by activities that repeatedly stress the tendon, causing inflammation. In some cases even prolonged periods of standing can cause symptoms.

Ankle Sprains

The ankle is often injured while performing daily activities of work, play, and sports. The ankle, a hinged type joint, takes a tremendous amount of stress, especially while running. Ankle sprains are the result of the ankle rolling in or out, stretching or tearing the ligaments on the inside and/or outside of the ankle. The pain of an ankle sprain is significant and often keeps the injured person out of play or work for a period of time. With appropriate treatment, ankle sprains often heal quickly and do not become a chronic problem.

Patellofemoral Syndrome (knee)

Knee injuries or pain are the most common complaint by sports participants. Studies have shown that patellofemoral pain syndrome comprises up to 50% of all overuse injuries. The syndrome is caused by an irritation of the under-surface of the patella (knee cap). The pain is usually a dull pain that seems to come from deep in the knee. It is worse with deep knee bend-type exposures. Usually there is pain climbing stairs and after sitting for a prolonged period of time.

The patella is a moving part that glides up and down a groove in the femur (thigh bone) as you bend and straighten your knee. The pain is caused by compression of the patella and the femur which increase as you bend your knee.

Basically, the irritation of the patella causes an inflammation which causes the pain. **THIS IS NOT ARTHRITIS.**

Osgood-Schlatter Disease

Osgood-Schlatter Disease (OSD) is an inflammation (irritation) where the tendon from the patella (kneecap) attaches to the tibia (shin bone).

A typical symptom of OSD is pain in the front of the shin about 2 to 3 inches below the kneecap. There may also be swelling in the area, especially if you have had the condition for several months. Symptoms can range from mild knee pain only during sports to constant pain that makes participation impossible.

Knee Ligament Injury

The stability of the knee is dependent on powerful muscles which act as active restraints and four strong ligaments which act as passive restraints.

The four ligaments are as follows:

- The medial collateral ligament (MCL) prevents the knee from buckling inward
- The lateral collateral ligament (LCL) prevents the knee from buckling outward
- The anterior cruciate ligament (ACL) prevents the tibia from sliding forward under the femur
- The posterior cruciate ligament (PCL) prevents the tibia from sliding backwards under the femur

Ligament injuries (sprains) are classified according to severity as follows:

- Grade I (mild) where the ligament is stretched but only a few fibers are disrupted
- Grade II (moderate) where the ligament is partially disrupted
- Grade III (severe) where the ligament is totally disrupted and there is instability

Rotator Cuff Tendonitis

This is one of the most commonly occurring injuries in sports and work where the arm is used in an overhead motion. The pain is usually felt on the tip of the shoulder or part way down the shoulder muscle. The pain is felt when the arm is lifted overhead in a certain direction. In extreme cases, pain will be present all the time and it may even waken the injured individual from a deep sleep.

The shoulder is a ball and socket joint but the socket is not very big and the shoulder is relatively unstable. This puts a lot of stress on the tendons and muscles that move the arm and help support the shoulder. The tendons are further prone to becoming inflamed as they go through a very tight channel of bone. When the arm is raised the channel becomes smaller and makes the area more prone to inflammation.

Shoulder Bursitis

The shoulder is a ball and socket joint with articulations that allow for a wide range of movement. This wide range of motion in the shoulder occurs at the cost of decreased stability. The bursa is a fluid-filled sack found in those areas in the body where the friction between tissues might occur. Their main function is to provide cushion and support in areas where repetitive motion are common. Overuse of muscles or tendons in regions where bursa are found, as well as continuous external compression or trauma, can cause bursitis. Symptoms include swelling, pain, and often a loss of muscular strength and range of motion. Repeated cumulative trauma may eventually lead to the formation of calcium deposits and to degeneration of the internal lining of the bursa.

There are several bursa in the shoulder region: the subacromial, the sub deltoid, the subcoracoid, and the sub scapular, which, as their names imply, lay beneath the acromon, deltoid, coracoids, and scapula, respectively.

Epicondylitis - Tennis/Golfers Elbow

Epicondylitis is caused by inflammation of the forearm muscle attachments to the body knob (epicedial) on the elbow. It is a form of tendonitis. Lateral epicondylitis, also called "tennis elbow", is a term used when the muscles of the elbow are inflamed. Medial epicondylitis, known as "golfer's elbow", refers to inflamed muscle attachments on the inside of the elbow. In either type of epicondylitis, pain may be felt where the muscle tissue attaches to the bone of the elbow or it may radiate down the forearm muscles, occasionally to the wrist. Epicondylitis is usually related either to overuse or a direct blow to the area. Pain is most noticeable during or after stressful and/or repetitive use of the arm. Activities involving strong grasp or repetitive forearm rotation are especially aggravating.

Neck Strain

Neck pain may result from abnormalities in the soft tissues – the muscles, ligaments, and nerves – as well as in bones and joints of the spine. The most common cause of neck pain is soft tissue abnormalities due to injury or prolonged wear and tear. In some people neck problems may be the source of pain in the upper back, shoulders, or arms.

Degenerative diseases that cause neck pain include osteoarthritis and rheumatoid arthritis. Osteoarthritis usually occurs in older people as a result of wear and tear of the joints between the bones in the neck. Both of these major types of arthritis can cause stiffness and pain.

Cervical disc degeneration also can cause neck pain. The disc acts as a shock absorber between the bones in the neck. In cervical disc degeneration, the normal gelatin-like centre of the disc degenerates and the space between the vertebrae narrows. As the disc space narrows, added stress is applied to the joints of the spine causing further wear and tear and degenerative disease. The cervical disc may protrude and cause pressure on the spinal cord or nerve roots when the rim of the disc weakens.

Carpal Tunnel Syndrome

Carpal Tunnel Syndrome (CTS) is a problem involving the hand, caused by pressure on the median nerve at the wrist. This leads to symptoms including numbness and tingling in the hand, especially involving the thumb, index, middle and half of the ring finger. There may be pain associated with CTS that can be isolated to the hand or wrist, but sometimes radiates up the arm. CTS frequently awakens people at night and symptoms may occur with activities such as driving, writing, or other actions involving significant hand use. With advanced carpal tunnel syndrome loss of strength or muscle bulk at the base of the thumb may occur.

The carpal tunnel is a canal formed by bones on the back of the wrist and a ligament across the palm side of the wrist. Through this tunnel travels all the tendons that bend the thumb and fingers and the nerve that supplies feeling to the thumb, index finger, middle finger, part of the ring finger, and the muscles at the base of the thumb.

Hand intensive activities that lead to a tendonitis involving tendons that flex the thumb and fingers causes these tendons to swell. The subsequent swelling "fills up" the tunnel and can apply pressure to the nerve causing the numbness.

Low Back Pain

Low back pain can be divided into two main types:

- Mechanical Type Pain
- Compressive Type Pain

Mechanical type pain results from inflammation caused by irritation or injury to the disc, the facet joints, the ligaments, or the muscles of the back. A common cause of mechanical pain is disc degeneration. A typical muscle strain or lumbar strain can also be the cause of mechanical type symptoms. Mechanical type back pain usually starts near the lower spine. Mechanical type pain may also spread to include the buttock and thigh areas.

Compressive or neurogenic (nerve-related) type pain occurs when the nerve roots that leave the spine are irritated or pinched. A common cause of compressive pain is herniated disc. The nerves that leave

the lower lumbar spine join to form the sciatic nerve. This nerve provides sensation and controls muscles of the lower leg.

One of the earliest signs of pressure on a nerve root is numbness in the area supplied by the nerve. There's commonly pain in the same area, usually extending below the knee to the foot. This can be confusing at times since there is no back pain, but the problem is located in the lumbar spine.

APPENDIX ONE - INDUSTRY SPECIFIC PREVENTION

INDUSTRY-SPECIFIC CAUSES OF STRAIN INJURIES, THE WORK ACTIVITY ASSOCIATED WITH THE STRAIN, AND PREVENTIVE ACTIONS

SHIPYARDS

Cause of Injury –	Lifting
Work Activity –	Moving heavy materials
Preventive Actions –	Use mechanical lifting devices
	Plan the lift before lifting the object
	Get help manually lifting weights over 50 lbs.
	Use proper lifting carrying techniques
	Use administrative controls for repetitive lifts
	Use the proper PPE for the job

Cause of Injury –	Pushing and pulling
Work Activity –	Moving and aligning heavy materials, rigging
Preventive actions –	Inspect tools and equipment before use
	Remove defective tools from service
	Use mechanical lifting devices
	Have a good grip on hand tools and pry bars
	Maintain good housekeeping
	Use tag lines
	Avoid overexertion
	Do not exert more than 3/4 personal maximum pressure
	Get help lifting heavy rigging
	Use proper PPE for the job
	Use administrative controls for repetitive pushing/pulling

Cause of Injury –	Repetitive motion
Work Activity –	Use of hammers, feeding material into machines, using chain falls, jacks, ratchets, turnbuckles, and come-a-longs
Preventive actions –	Stretch and warm up before engaging in strenuous work
	Alternate use of hands and arms
	Periodically stop to rest and stretch
	Avoid overexertion
	Do not use more than 3/4 of personal maximum pressure
	Use administrative controls

Cause of Injury –	Work positions
Work activity –	Cramped/awkward work areas
	Static work positions
Preventive actions –	Stretch out tight muscles regularly
	Reposition regularly
	Exit the space regularly to relieve cramped muscles
	Use administrative controls to rotate workers in/out

Cause of Injury –	Access to work areas
Work activity –	Climbing and walking
Preventive actions –	Use 3 point contact at all times on ladders
	Use handrails where provided
	Use designated walkways
	Maintain good housekeeping
	Inspect ladders before use

Cause of Injury –	Slips/falls
Work activity –	Climbing, elevated unprotected work surfaces, walking surfaces, scaffolding
Preventive actions –	Inspect scaffolding daily before use
	Use 3-point contact at all times on ladders
	Be aware of wet/icy/debris covered walking surfaces
	Do not climb on equipment/vessels
	Use access points where provided, or steps, stairs, or ladders
	Use fall protection equipment when exposed to unguarded elevations over 5 feet
	Use designated walkways
	Maintain good housekeeping, line management, material storage

Cause of Injury –	Fatigue
Work activity –	Extended hours of work
Preventive actions –	Rest
	Rotation of workers
	Maintain good hydration
	Maintain good health and nutrition
	Exercise regularly to increase physical stamina

MARINE CARGO HANDLING

Cause of Injury –	Lifting
Work activity –	Break bulk
Preventive actions –	Use mechanical lifting devices
	Plan the lift before lifting the object
	Get help when manually lifting weights over 50 lbs.
	Always use proper lifting/carrying technique
	Use administrative controls when lifts become repetitive
	Incorporate 50 lb. weight limits for individual lifts
	Use proper PPE for the job

OTHER OPERATIONS (MARINE CONSTRUCTION, OIL AND GAS, PAINTING/BLASTING, ETC.)

Cause of Injury –	Lifting
Work activity –	Moving heavy materials
Preventive actions –	Use mechanical lifting devices
	Plan the lift before lifting the object
	Get help when manually lifting weights over 50 lbs.
	Use administrative controls when lifts become repetitive
	Incorporate 50 lb. weight limits for individual lifts
	Use proper PPE for the job

APPENDIX TWO - STRETCHING EXERCISES

Hold each stretch 20-30 seconds and repeat each stretch two times

Similar to any exercise or work effort, don't overdo it. Begin each stretch slowly and self-monitor the pressure building on the muscle. When the pressure begins to build and feel uncomfortable or painful, back off. Learn to stretch to a level that is comfortable without creating pain. If you have any questions regarding how to properly conduct the stretch exercise, ask a supervisor or person in charge before you begin the stretch. If you experience any sudden pain or extreme discomfort, stop stretching immediately and report the problem to your immediate supervisor.

Remember, it is important to make sure your body is prepared to address the intensity of the job to be completed. Stretch and warm up your muscles properly and avoid the pain and discomfort of muscle strains.

Hamstring Stretch

Hip Flexor Stretch

Adductor Stretch
Gastro Stretch

Soleus Stretch

Neck Stretch

Pec/Bicep Stretch

Trapezius Stretch

Rhomboid Stretch

Triceps Stretch

Hands and Wrist Stretch

REFERENCES

The following resources are listed to help in the development of a Strain Injury Prevention program.

The American Equity Underwriters, Inc Loss Control Department

The American Equity Underwriters, Inc. Safety Committee

http://www.osha.gov/dep/maritime/longshoring_guidance.html

http://www.osha.gov/Publications/quickcard/gangway-safety-cargo-handling.pdf

http://www.osha.gov/dts/maritime/sltc/ships/ships_shipfitters.html

http://www.osha.gov/Publications/3375shipbreaking.pdf

http://www.osha.gov/dep/maritime/shipyard_guidance.html

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NSC Injury Facts 2017

http://en.wikipedia.org/wiki/Strain_(injury)#References

http://www.kinetexrehab.com/go.asp?view=injuries#ps

http://www.wellnessproposals.com/workplace-wellness-programs.htm

http://www.nsc.org/safety_work/bringsafetyhome/Pages/BringSafetyHome.aspx

http://www.sorm.state.tx.us/Workers%27_Compensation/Return_To_Work/overview.php

http://www.pelletierinc.com/Stretch_Programs.html

http://www.backandbodycare.com/home/other/heavy_stretch_flex.htm

http://www.lni.wa.gov/Safety/Topics/AtoZ/Grants/awardees/IntegritySafetyServices/Poster.pdf

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