

# Injury Prevention in an Aging Workforce

*Strategies for integrating safety, fitness & supervisor leadership*

**By Fred S. Drennan and David Richey**

WITH BABY BOOMERS entering their 50s, employers are feeling the impact of an aging workforce. According to the Surgeon General, 60 percent of adults are overweight and out of shape (Satcher). This is a major cause for concern, not only because it affects general health and healthcare costs, but because it can lead to cumulative trauma disorders (CTDs) to the back, knees, shoulders and neck. These injuries make up half of all workers' compensation (WC) costs (BLS; University of Maryland). Yet, general fitness—the ability to perform everyday tasks without excess fatigue or injury—is rarely a part of an injury prevention program.

Never has there been a greater need to help workers improve their fitness and adopt healthier lifestyles. Anyone who has ever tried to maintain a fitness routine or stick to a diet knows that the need for better fitness does not necessarily translate to accomplishment. This article clarifies the need to integrate personal fitness into worksite safety leadership programs; defines the key features and strategies of effective integrated programs; and presents case studies where integrated fitness and safety leadership have reduced musculoskeletal injuries, reduced WC costs and created a culture supportive of world-class safety systems.

## **What Is the Impact of the Aging Workforce?**

In America, a person turns 50 every eight seconds. Those 50 or older comprise 52 percent of the workforce today, and 75 out of every 100 will remain in the workforce until they are at least 65 (Winger). These numbers will have a major impact on employer healthcare costs.

American businesses spent half a trillion dollars on healthcare and WC last year, mostly due to illnesses that are the result of unhealthy lifestyles, such as smoking, excess weight, lack of exercise and poor nutrition. In 2001, "preventable" WC and healthcare costs exceeded six times the profit of the top 10 U.S. corporations. Diseases controllable by lifestyle cost the U.S. \$400 billion in healthcare annually; and in WC, CTDs alone exceed \$65 billion ("Top Ten Companies"). Never has the case been more justified to integrate fitness into the daily worksite safety culture.

## **Making the Safety/Fitness Connection**

Lack of flexibility and strength is a primary risk factor for low-back and other soft-tissue injuries (Hoeger and Hoeger). Back injuries and other CTDs account for half of all WC costs (BLS). In this environment, an effective safety program is not complete unless it addresses flexibility and strength as preventive measures for musculoskeletal injuries (MSDs). Basic flexibility, strength and knowledge about fitness and health are an individual's most important

**Fred S. Drennan**, founder and president of Team Safety Inc., has more than 25 years' experience in the public and private sectors creating custom safety programs. He created Back Synergy, a team-based safety program that integrates fitness, daily safety and health training, and supervisor leadership certification. Drennan is a member of ASSE's Valley Coastal Chapter and Consultants Practice Specialty.

**David Richey, Ph.D.**, chair of Team Safety Inc., is an author, consultant and industrial psychologist. He is a leading speaker on getting results from employee participation, quality and safety systems. He has spearheaded quality and performance programs for Kodak, Caterpillar, DuPont and other major corporations.

safety asset. Management must educate employees about the important role that flexibility and strength play in preserving their fitness, and should include daily stretching as part of employees' safety routine. And, if they really want to reduce injury rates and incidents, they must mandate participation.

Consider the following examples:

**Poor hamstring flexibility.** Traditional back safety training theory says to "lift with the legs." Employers sign up their workers for annual back safety training, yet back injuries continue to be the second-leading cause of workplace absenteeism. Why? When theory translates to practice, proper lifting prevents injury. However, too many employees fall short of the proper lifting model as they perform daily tasks. They lack hamstring flexibility and strength in the quadriceps to get into the proper lifting position (Photo 1, pg. 35).

**Muscle imbalance.** Working in the same position or performing the same task repeatedly will eventually cause the body to develop muscle imbalances that result in chronic poor posture. Even when workstations are designed to ergonomic standards, employees suffer pain and discomfort from chronic poor posture due to muscle imbalance. A well-designed flexibility and strength program can improve damaging postures, relieve chronic pain and may reverse injury or prevent costly surgery for CTDs (Hoeger and Hoeger 116).

### **Flexibility & Strength Training**

To achieve maximum participation in a fitness initiative, a firm must adopt a program that a majority of employees can perform without strain or pain, and integrate it into the daily safety routine. Most individuals will tolerate a gradual introduction to stretching and strengthening moves. These moves can usually be performed in regular clothes without getting on the floor. Because stretching feels good, employees feel the benefits almost immediately.

### **Maximizing Return on Investment Through Integrated Safety, Fitness & Leadership**

To survive in today's economy, organizations cut costs wherever possible. Department heads, including the safety department, must justify their budgets. Senior management asks for return on investment (ROI) for any costs above normal operating expenses. Integrating safety, fitness and leadership can broaden the impact of safety investment beyond just the reduction of WC cost.

### **Linking Safety & Health: New Opportunities for ROI**

WC and healthcare costs are two sides of the same coin. Half of all WC costs originate from CTDs (back injuries, carpal tunnel syndrome, chronic pain and other musculoskeletal injuries) (BLS). Half of all healthcare costs are the result of unhealthy lifestyles. In 2000, the direct medical costs associated with physical inactivity alone were \$76 billion (CDC). Healthcare costs average about three times the cost of WC. Given these statistics, it is clear that improving the fitness level of the workforce by helping them adopt healthier lifestyles has a huge potential

for cost savings—not only in WC and healthcare, but also in having a more fit, productive workforce.

### **Linking Safety to Productivity: Leadership Skills**

In today's global marketplace, competitive, profitable organizations must build highly committed, highly effective workforces to stay in the game (Deming). They focus their efforts on the natural work unit and the immediate supervisor to achieve world-class results. World-class management organizations have transitioned from the traditional "command and control" style to self-managed work teams with a skilled supervisor as coach. Because SH&E professionals have traditionally focused on compliance, their activities are often considered a legal necessity rather than a profit center. However, when organizations adopt the team approach to injury prevention, they truly have the potential to contribute to the organization's profitability.

Integrating fitness, leadership and safety develops skills and creates systems that translate across the organization. For example, the skills a supervisor uses to achieve record-breaking safety performance are the same skills required for improving productivity and quality, and reducing waste. Training safety leadership skills at the supervisor level and tracking performance improvement increases the value of the SH&E professional as a member of the management team. It not only makes the job easier, but it also produces measurable results that get serious support from upper management.

Integrated fitness, safety and supervisor leadership can extend safety ROI in many measurable areas:

- reduced incidence and severity of CTDs;
- 90-percent or greater participation rate in daily safety activities;
- more skillful supervisor leadership;
- improved flexibility and strength for greater overall fitness and health;
- daily safety training for true culture/behavior change;
- 30 to 80 percent of participants adopt healthier lifestyles;
- improved morale and feeling that the employer cares;
- increased focus on team-driven safety and health objectives;
- increased productivity through healthier employees;
- reduced healthcare costs.

### **Expanding the Measurement Systems**

Traditional safety performance measurements focus on days without a lost-time injury, incident rates and number of safety meetings attended. Healthcare and WC costs are usually measured at the human resource level. To expand measurement objectives, the SH&E professional can:

- establish criteria for supervisor safety leadership skill;
- audit supervisor on-the-job safety skills application and safety performance;
- survey employees for job satisfaction;

## Key Elements of Successful Fitness/Safety/Leadership Integration

Senior management must initiate the culture change.

- To achieve culture change, senior management must manage the processes.

**Supervisor safety leadership training.**

- To lead their teams, supervisors must learn leadership skills and apply them on the job (giving positive recognition and constructive feedback, setting tolerance levels, team-building, goal-setting, scorekeeping for safety systems, and supervisor as trainer).

**Team-based systems.**

- Team-based management outperforms “command” management style.
- Natural workgroups make the best teams.

**Daily flexibility and strength training.**

- Fit workers are more productive and less prone to injury.
- Flexibility is a first step everyone can take to improve fitness.

**Install measurement systems.**

- What gets measured is done.

**Integrate safety training during the fitness routine.**

- The fitness routine is a part of the safety meeting and is therefore mandatory.

**Install audit systems.**

- To assess supervisor and team performance, frequent auditing is required.

**Accountability at supervisor and team level.**

- Recognize and reward high performance at the supervisor, team and individual level.

- Provide consequences for low performance.

- Senior managers must regularly review scorecards at staff meetings.

- set goals for safety achievement at the individual, team and supervisor level (Richey and Drennan).

### Is the Employer Responsible for a Worker's Fitness & Health?

If all employees took responsibility for their own fitness and maintained themselves at peak performance level throughout their adult lives, employers would have nothing to worry about. Injury rates would be cut dramatically, absenteeism would drop and our healthcare system would not be upside-down. However, many people do not take care of themselves, and they are getting older. These people populate offices, work on shop floors, drive vehicles and operate equipment. They are loyal, experienced employees who often work in pain on a daily basis and do not report it. However loyal they are, productivity suffers.

In 2001, the Surgeon General reported that 60 percent of adults do not exercise enough to maintain basic health; one in four adults are totally sedentary (Satcher). Heart disease, type 2 diabetes and stroke are all preventable with proper diet and exercise. This information is conveyed daily on TV, in magazines and newspapers, on the radio and on the Internet. Bombarded with this information, most people should be at the gym, slimming down and exercising every day—yet most are not. Half of those who start exercise programs with good intentions end up quitting within six months, and 90 percent quit within one year (McElroy).

### Employers Must Share the Responsibility

Americans lead the world in hours worked. They commute long distances. Along the way, they stop off at fast food restaurants for an unhealthy meal. When they get home, they flop on the couch, exhausted. Family members who may try to improve their lifestyle are often defeated by lack of support from others (Atkins).

General lack of personal fitness has a tremendous impact in the workplace. Employees continue to suffer soft-tissue injuries, despite engineering improvements and efforts to provide ergonomically correct workstations. Excessive weight, and lack of flexibility and strength in the general worker population take their toll on employees, while employers continue to suffer the losses, either in WC or healthcare costs. Therefore, while the individual must ultimately be responsible for his/her own physical condition, employers must “step up to the plate” if they are to remain competitive in today's global environment. They must provide every opportunity to promote employee fitness—or suffer financial consequences.

### Misplaced Focus: A Passive Approach

Most workplace efforts designed to help employees improve their health originate in the human resources department. These efforts often take the form of passive information such as brochures distributed by healthcare insurance providers, or an annual health

fair where employees can check their cholesterol levels or blood pressure for free. While this approach certainly has value, it rarely changes behavior. The reality is that most people wait until that first heart attack or stroke before they act to improve their health.

It will take more than pamphlets and health fairs to motivate the general workforce toward fitness and lasting lifestyle change. Employers must:

- build in time for daily fitness to keep workers of all ages healthy and productive;
- educate employees about the risks to themselves and to the organization's survival;
- abandon the passive approach and integrate health and fitness into daily operations.

### A Team Approach

Self-directed work groups (teams) always outperform traditional command-and-control management systems (NIST). Criteria for the nationally coveted Malcolm Baldrige Quality Award include team development as a core requirement; team involvement is validated by Motorola, Ford and 3M. General Electric has made self-managing worker teams a centerpiece of its organization approach (Katzenbach and Smith).

The level of team deployment varies from organization to organization, and even within departments in an organization. In some cases, work groups exist but do not know they are on a team. When supervisors view their natural work group as a team and management recognizes and rewards at the supervisor and team level, team members work together for the success of their team.

Integrated fitness, safety and leadership creates dynamic, high-performance teams from natural work groups.

### Natural Work Groups Make the Best Teams

Teams formed from natural work groups generate “team power” for world-class safety perform-



# Strategies to Create a Mandate for Participation

To stay competitive in a world market, organizations must adopt new strategies for safety, health, leadership and teamwork. Executive management must set direction and policy to mandate full participation. Some of these strategies will be easy to implement, others will take major policy change. All are necessary to effectively engage everyone to improve their workplace safety and personal health.

**Train employees about organization survivability.** Increased safety and health costs affect everyone. Employees must learn how their personal risk factors for injury impact survivability of the organization.

**Link workers' compensation (WC) and healthcare costs.** WC and healthcare costs have a tremendous impact on business profitability. At least half of WC and healthcare costs are preventable and, therefore, controllable. It is everyone's responsibility to control what s/he can to maintain a healthy, profitable organization.

**Require employees to maintain "fitness for duty."** Employers have every right to expect employees to maintain the fitness level necessary to perform the essential functions of their job. "Limited duty" may be needed after an injury, but should not be used as a long term "accommodation" for an employee whose fitness level prohibits performance of essential job functions.

**Move toward self-managed safety teams.** Team-based recognition promotes greater productivity and achievement. Flexibility and strength sessions are a powerful team-building exercise. Reward participation at the team level to get maximum engagement.

**Audit supervisor participation.** Require all supervisors to demonstrate safety leadership and on-the-job skills application. It is required that supervisors lead their teams, train, recognize, problem-solve and track safety improvements.

**Empower the teams.** High-performance teams work together to maintain health and fitness. With good leadership, teams can set and achieve fitness and safety performance goals that benefit themselves, the team and the organization.

**Hold supervisors and employees accountable for safety performance.** Safety is never optional. Do not allow a "naysayer" to extinguish or dilute the power of the program. Install systems that ensure positive and negative consequences for supervisor and employee level of engagement in safety, fitness and leadership systems. Include promotion, salary increases and bonuses.

**Promote culture change.** Half of WC and healthcare costs are the direct result of unhealthy personal behavior and lifestyles, and the impact of an aging workforce. Integrating fitness into the daily safety routine puts responsibility back on the shoulders of the individual. Daily flexibility and strength training with the natural work group becomes a powerful catalyst for lifestyle change.

ance. The following elements are common to natural work groups:

- Develop common goals.
- Face common hazards, risks and challenges.
- Require 100-percent participation.
- Already have formal or informal (supervisor) team leaders.
- Help individuals to achieve more.
- Measure and track progress at the team level.
- Provide a forum for daily safety activities.
- Provide daily forum for positive recognition.

## Daily Stretching Builds Strong Teams

One of the most profound outcomes of bringing the natural work group together for a daily stretch routine is team building. Team members have the opportunity to develop trust and camaraderie. Successful behavior-based safety (BBS) observation programs rely on trust. If these initiatives fail, it may be that no strategies to foster team building and trust exist (Quick). Organizations that lack trust in the environment have difficulty recruiting and maintaining observers. Workers fear backlash from reporting on other employees. Outside observers can be viewed negatively and participation can dwindle to zero [Drennan(a)].

Team building fosters good morale, trust, cohesiveness, communication and productivity. In a team-based environment, members support each other and care about each other's safety. Observations of unsafe acts or near-hits at the team level become shared opportunities to improve the safety of the team, and do not simply "rack up" numbers of observations performed. Employee surveys consistently report that daily stretching with their team builds strong teams. Eighty-one percent of employees at a Ventura County public agency agreed that stretching is a powerful team-building tool [Drennan(c)].

## Accountability: Inspect What You Expect

World-class safety performance requires accountability. Teams and supervisors must be trained in the systems installed and the key measures that support them, then must be audited for performance based on those measures. Key measures for supervisor safety leadership include seven basic leadership skills that are also applicable to other supervisor functions:

- giving positive recognition;
- giving constructive feedback;
- setting tolerance levels;
- team building;
- soliciting safety suggestions for continuous improvement;
- goal setting;
- scorekeeping for safety systems;
- supervisor as trainer.

Training is of no value unless it is applied on the job. To successfully integrate leadership and safety, supervisors must be audited to ensure they apply what they've learned. SH&E professionals are responsible for ensuring that the training conducted is audited regularly to make sure the methods are not only used, but also achieve safety goals. The first step is to develop a supervisor safety performance scorecard based on the actual skills required on the job (Brown). At a minimum, supervisors should be audited monthly during the first year of safety leadership training. A management-supported recognition plan should be in place at program startup so supervisors know in advance what is expected and what's in it for them. Rewards and recognition must be fairly awarded to supervisors who demonstrate mastery of the leadership skills. Since ignoring low performance will have a negative impact on the entire effort, management must make a supervisor aware of his/her failure to meet the minimum safety requirements. This can take the form of anything from a face-to-face meeting to written notice.

Ultimate accountability for safety performance should extend to the supervisor's annual review. The team approach gives a supervisor more control over the work group's performance, and auditable systems provide data to support accountability.

**Figure 1**

# SuperScoreCard

The SuperScoreCard tracks long-term on-the-job application of supervisor safety leadership skills and provides measurable data for supervisor accountability.

Supervisor Name	SUPERSCORECARD																												
	LEADERSHIP WORKSHOP 1 Safety & Health Assessment	Employee Orientation	Phase I - 2 Audits - Supervisor Score	Observed Skills - Positive Reinforcement	Scorekeeping/Attendance	Health Safety Training	Phase I Totals	LEADERSHIP WORKSHOP 2	Phase II - 2 Audits	Observed Skills - Near Misses	Observed Skills - Teambuilding	Phase II Totals	LEADERSHIP WORKSHOP 3	Phase III - 2 Audits	Observed Skills - Unsafe Acts	Observed Skills - Outlining Suggestions	Phase III Totals	LEADERSHIP WORKSHOP 4	Phase IV - 4 Audits	Observed Skills - Safety	Observed Skills - Reporting Unsafe Conditions	Observed Skills - Goal Setting	Safety & Health Assessment	Phase IV Totals	Management Evaluation (Reserve 1)	Management Evaluation (Reserve 2)	TOTAL		

### What to Audit

To achieve consistent, record-breaking safety performance, an auditing system must be installed. In an integrated program, auditing focuses on the supervisor and team level. Using a behavior-based scoring system, the supervisor is measured for use of safety leadership skills and his/her team's on-the-job application of the seven safety systems.

For example, one leadership skill is "supervisor as trainer." Using one particular auditing system, supervisors are trained to deliver daily safety training using a large-format FlipBook Training System™, which contains a mini safety meeting for every working day of the year. Each one or two months, supervisors are audited while using the system. The audit is performed during the stretch routine using an audit sheet that coincides with the training material. The auditor observes actual supervisor and team performance and reviews the teams data log.

The following audit elements were compiled by the authors' firm based on six years of implementation in various work environments (see section entitled "Six Years of Development: Lessons Learned," pg. 34). Input from hundreds of supervisors has validated each audit point. Not all organizations choose to use all audit points. Refined using customer feedback from supervisors and managers in the field, the following audit elements were most-often recommended to qualify supervisors for leadership certification:

- Team participation in the daily flexibility and strength program.
- Using the FlipBook and completing the safety quizzes (supervisor as trainer).
- Team-building activity.
- Goal-setting activity.
- Near-hit reporting.
- Reporting unsafe acts.
- Reporting unsafe conditions.
- Making safety suggestions for continuous improvement.
- Developing or reviewing job safety analyses (JSA).
- Conducting root-cause analyses (RCA).
- Number of safety improvements completed.

(Note: JSAs and RCAs are not conducted during the flexibility session, but may be recommended to resolve a safety issue reported during the session.)

High marks in these elements also correlate with findings supported by Gallup research as indicators for high quality and productivity (Buckingham and

Coffman). This level of auditing provides many opportunities for safety performance measurement. At the end of the first year, supervisors should have accrued sufficient audit points for applying their leadership skills on the job to achieve supervisor safety leadership certification. And by meeting every day before going to work, a team significantly increases opportunities for safety communication.

A "SuperScorecard" and software program can be used to track this data (Figure 1). How senior management makes use of the scorecard varies from one organization to another. Highly effective firms present scorecard and team performance data at weekly staff meetings, and provide recognition and rewards at the supervisor, team and individual level. At a minimum, safety performance based on auditable, objective data should be part of the supervisor's annual performance review.

### Can Employees Multitask?

A core process of the integrated approach is to deliver focused safety training during the daily flexibility and strength routine. This link is a powerful justification for total participation. However, the question often arises: Can employees perform stretches and pay attention to a safety message at the same time? The answer is yes, if the program is phased to introduce the concepts step by step.

During the first quarter (Phase I), participants focus on learning the flexibility routine and supervisors practice leading the group, giving positive recognition, scorekeeping for attendance and using the training system. A day's one-minute topic might be: tight hamstrings can cause low back pain. Participants learn what stretches can immediately relieve low back pain and how increased hamstring flexibility helps people use proper lifting postures. As participants progress into the second quarter, they have increased body awareness and have become more comfortable with the routine. Phase II materials include training and dialogues to engage participants and get them talking about their observations. Just as they could ride a stationary bike or walk on a treadmill while watching TV or reading a newspaper, they can focus on short safety messages delivered by the supervisor or a designee. During this phase, supervisors are prompted to apply leadership skills on the job and engage team members in other daily safety activities, such as reporting a safe-

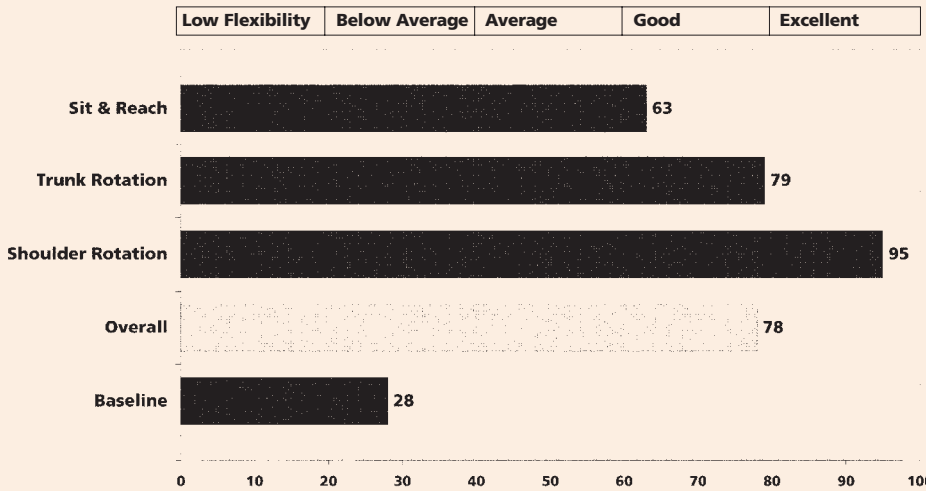
## Flexibility Assessment: Jane Doe

Flexibility score after one year in a stretching program compared to baseline measurement.

Good flexibility is an important factor in maintaining good health and quality of life. Many musculoskeletal injuries, especially among adults, are related to lack of flexibility. Flexibility increases a person's range of motion, and lowers the risk of injury to the low back, shoulders and other soft tissues. Regular stretching *can* increase a person's flexibility.

Test Type	Baseline: December 2001	Phase 4 Assessment: November 2002
Sit & Reach	14.25	15.5
Trunk Rotation	5	22.5
Shoulder Rotation	28	6

Jane's flexibility measurements were used to compute a percentile ranking compared to females of 37 years old. Her *overall* ranking is an average of three flexibility test scores. Her overall *baseline* score will be displayed for comparison as she goes through the program so she can track her improvement.



Average, below-average and low flexibility rankings put you at risk for injuries because of poor flexibility. Ideally, you should be in the good or excellent rankings to help prevent injuries.

ty observation. For example, a prompt might be to ask whether anyone had witnessed an unsafe act. If so, the team may decide to flag it for further action and perhaps broadcast the information to the rest of the organization. When the routine is over, the supervisor or a designee log it and set up an action plan. Because the team meets every day, important conditions or incidents are communicated immediately and the entire team is involved in the outcome.

### Six Years of Development: Lessons Learned

The integrated fitness, safety and leadership approach was developed specifically to address the incidence and severity of musculoskeletal injuries related to CTDs. Stretching at work is not a new idea; it has often been implemented as a simple warm-up prior to exercise or strenuous work. A comprehensive program of balanced flexibility and strength becomes a work hardening activity. When implemented in progressive phases including flexibility and strength with measurement systems and feedback, it plays a significant role in reducing illness and injury. It improves overall fitness, relieves pain and stiffness, and is necessary to prevent MSDs in an aging workforce.

The value of a properly implemented program, especially in an aging workforce, simply cannot be denied—reduced risk factors for CTDs, reduced injury and pain, fewer WC and health-care claims, and improved morale and productivity.

SH&E professionals have an obligation to seek the root causes of injury. Daily flexibility and strength training goes directly to the root cause of most MSDs. In 1992, a team of experts sought to develop a program that would appeal to everyone, achieve maximum participation and provide continuous improvement in personal fitness. The fitness professionals had master's-level degrees in biomechanics and kinesiology, and the leadership team was led by an experienced industrial psychologist. Working with management teams in various environments, the team assembled a series of stretches that focused on the areas most commonly at risk for CTDs—necks, shoulders, wrists, knees, hamstrings, low back and mid-body areas. The goal was to create a 10- to 12-minute measurable effort to improve basic flexibility, range of motion and strength.

The core processes were developed over six years—some by design, some by trial and error, and some by way of pure serendipity. The result was a viable program that is in operation at oil platforms, public agencies and manufacturing plants across the country.

The following case studies describe the journey.

### Offshore Oil Platforms: California

Oil industry workers on platforms off the coast of California had a high incidence of soft-tissue injuries involving the low back and knees. Most of the workers were in their 40s, overweight and out of shape. In addition, many workers had lost flexibility, balance and muscle strength—key risk factors for soft-tissue injury. Their daily work routine involved climbing many flights of stairs, constant bending and stooping, forceful gripping, heavy lifting and sustaining themselves in awkward positions. Although the platform operator was safety oriented, few regular safety meetings addressed fitness, excess weight or unhealthy lifestyles as risk factors for injury. Employees worked seven-day hitches, 12 hours a day. Their injury record clearly showed that the workforce was feeling the effects of cumulative trauma.

The worksite's voluntary stretching program began with an all-hands orientation that included



information about the importance of stretching in preventing CTDs. The platform operator designated space and furnished an exercise facility. Each participant received a simple diet booklet that outlined basics of healthy eating and a daily weight chart. The catering staff created lower-calorie, healthier meals and made them available to the platform workers. Those who participated began to experience the benefits, and some employees made significant lifestyle changes to improve their health both at work and home.

To align the stretching program with the platform operator's total quality management (TQM) efforts, baseline flexibility measurements established a starting point and subsequent flexibility testing provided improvement feedback to participants and management.

After three months of stretching, the platform superintendent asked for a different routine. The Phase II routine increased the challenge by adding controlled movement similar to tai chi. Measurement continued and participants improved. The program continues today. All meetings start with a stretch routine, which has become a core process at all of the firm's California facilities.

**Lessons learned.** A stretching routine should be changed about every three months. The stretch routines should start out easy, then gradually increase intensity. As participant flexibility increases, increase the challenge and add more elements. The multi-phase stretch routine became a core process of the fitness program.

The TQM process requires various measurement systems. This provides objective feedback and recognition for employee performance. The measurement system developed for the stretch routine included three flexibility tests: 1) hamstring flexibility, which is essential for proper lifting; 2) mid-body rotation, important for range of motion in the low back; and 3) shoulder rotation, measuring range of motion in the shoulder girdle (Figure 2). The flexibility measurement system is based on norms and test protocols used across the country. Individual rankings are computed on norms established by age and gender.

Participants liked having their flexibility measured and looked forward to receiving the results. They also wanted to know how they compared to others on their team and how their team compared to other teams. A software program provided test results for individuals and bar charts showing results at the team and organization level. While participants liked sharing their scores with others, raw data remained confidential, and participants could choose to exclude their scores from any public posting. The three flexibility tests and bar charts became core processes of the program.

### **Large County Agency: California**

A large county public works operation implemented a similar program to help control the incidence and severity of MSDs among flood control



(Clockwise from top left) Photo 1: Flexibility and strength are required for safe lifting. Which lifter is at risk for injury? Photo 2: Fitness sticks increase challenge and variety, and improve range of motion. Photo 3: Stretch cords add variety and challenge, and help improve basic, balanced strength.

workers and road crews. Using the proven processes implemented at offshore oil platforms, they conducted employee orientations, baseline measurements and quarterly flexibility tests for individuals and teams. This provided progressive feedback and motivation to improve. Stretches were implemented in four phases, each adding more challenge and variety, including balance, strength and coordination moves. Two new elements were added to minimize boredom. Fitness sticks sparked interest and increased challenge, and resistance cords promoted balanced strength (Photos 2 and 3). Qualified fitness professionals monitored the process and coached individuals and teams to higher performance.

After a year, performance data showed that the number of employees at high risk for CTDs had dropped from 92 to 40 percent. While flexibility training was successful in many locations, not all locations stayed with the program. For example, participation and risk factor reductions were greater where supervisors actively participated and encouraged team performance. One supervisor took his team from 90 percent at high risk (very low flexibility measures) to 100 percent in the low-risk categories (everyone achieved good to excellent flexibility status). This team logged 100-percent participation throughout the year. The supervisor with the lowest participation rate posted the lowest risk flexibility scores and the highest risk factors; the team gradually stopped participating. (Note: This organization did not agree to supply actual injury rates for either group.)

**Lessons learned.** Employees tend to adopt the supervisor's attitude about safety and health (Grazier). If a supervisor is enthusiastic and supports a daily stretching program, employees embrace it. If the supervisor is disinterested, the program languishes. It became clear that supervisory involvement is a key element in program success or failure. To achieve 100-percent participation, supervisor participation had to be guaranteed.

Borrowing from TQM and behavioral principles, supervisors were enrolled in a supervisor safety leadership program. Four supervisor safety leadership workshops—one for each quarter to coincide with the phased flexibility and strength program—presented seven safety leadership skills. Combined with daily safety messages and prompts for partici-

pation from the team, the 10-minute stretching session became the forum for the supervisor to deliver safety training on a daily basis. Along with periodic quizzes on the material presented, the daily training sessions have met most requirements of safety training compliance, which was an added benefit.

A pre-implementation planning workshop would ensure that future implementations would include an audit of injury data and establish a reliable feedback system to recover post-program data. The leadership workshops, FlipBook system and pre-implementation planning workshop became core processes of the integrated fitness/safety program.

#### **City Agency: Tree Trimming Department**

In a city parks and recreation department, the workers responsible for maintaining city trees and park lands suffered the majority of the injuries. As with many lost-time injuries, coworkers were forced to take up the slack, and poor morale affected production. The average worker age was 45. Jobs required heavy manual lifting and the use of power equipment that demanded significant physical effort. The department implemented a daily flexibility and strength program using all core processes, plus safety leadership training. Employees began to feel better right away; by the end of the year, their injury rates and lost-time incidents had improved dramatically (Figure 3).

Supervisors were not regularly using the FlipBook system to deliver safety messages. They enjoyed the flexibility and strength program, and were definitely feeling the benefits of stretching, but they were not engaging in the leadership skills application or conducting daily safety training during the flexibility routine.

Further inquiry revealed that the city lacked systems to hold supervisors accountable for safety performance, and that there was no two-way communication between supervisors and upper management regarding safety performance. It became clear that an auditing system was needed to objectively measure supervisor engagement in the leadership systems.

**Lessons learned.** In many work environments, supervisors will do only those things for which they are held accountable. Accountability is routinely practiced in production or sales, but seldom in safety. Without an audit system, it is nearly impossible to hold the supervisor accountable for safety performance. A behavior-based scorekeeping system was used to create the audit. Observers scored supervisors as they led the stretching program and used the training system. Supervisors were awarded points according to their application of the skills: 0 = no attempt; 1 = attempted; 2 = accomplished; 3 = skilled; and 4 = master. All data collected from the supervisor and team performance audits were summarized on a scorecard. The scorecard provided a basis for performance measurement that could easily be reviewed at senior management staff meetings as a quick look at the supervisor's participation in safety training and injury prevention. The auditing and

SuperScorecard became a core process of the integrated fitness/safety/leadership program.

#### **Multinational Manufacturer: Alabama**

One facility's injury rate ranked it fourth from the bottom in safety performance among the firm's 40 U.S. manufacturing plants. The facility's safety staff and senior managers sincerely wanted to move from "worst-in-class" to "best-in-class." They also wanted to achieve VPP status, but did not qualify in several areas. They tried using a behavior-based safety program, but reached an impasse between labor and management, and the program fizzled. When Six Sigma studies identified musculoskeletal injuries and an aging workforce as root causes of WC costs and injuries, the facility knew it had to address this problem head on.

Only a handful of the 300 employees were engaged in safety activities, all of whom were in the safety department. No employee safety recognition system was in place. The average age of the workforce was 47. The plant operated 24/7. With recent layoffs, supervisory staff was spread thin; for supervision, the facility relied heavily on lead persons with little training.

In December 2002, safety staff met with all employees to discuss their willingness to adopt a daily flexibility routine that incorporated safety training and leadership skills. Eighty-five percent voted yes. Those who voted no were primarily concerned about a mandatory program for physical activity. The union lobbied hard to influence others not to participate. However, in January 2003, the management and safety staff—assisted by a team of experts trained in the integrated fitness/safety/leadership teams approach—implemented the program.

The management team rolled out all the core processes. They formed 28 teams of natural work groups. All team leaders (including senior managers, supervisors and lead persons) attended Phase I safety leadership training.

During focus group meetings, team leaders expressed fears about employee participation. Strategies were discussed to help them focus on the positive aspects of the program and management agreed to give them full support. At program kick-off, 70 percent of employees volunteered to be tested for baseline flexibility, received their personal and team scores, and learned the Phase I stretching routine. Those who did not want to participate in stretching were required to attend the daily safety training conducted during the stretch routine and take quizzes based on the material presented. The program proceeded according to plan; employees began stretching every day, and worked through their daily safety training system.

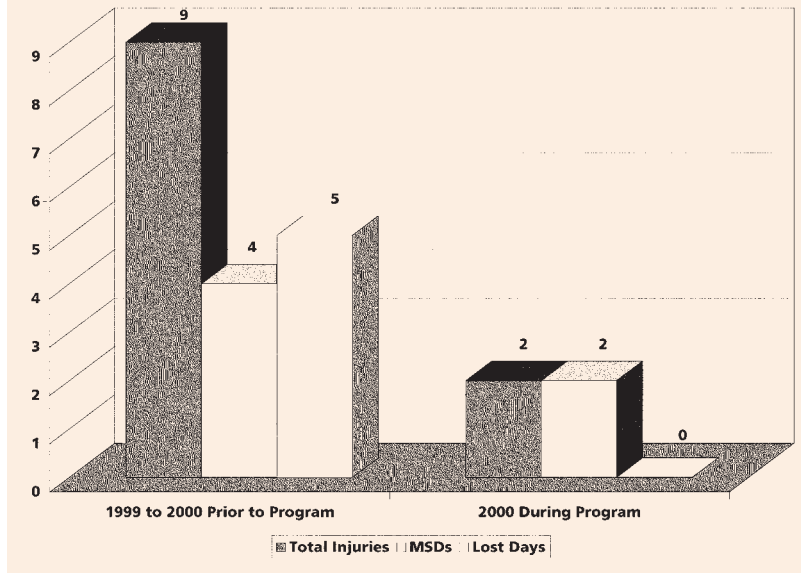
By the end of the first two weeks, the teams had begun to work their "magic," and more employees agreed to be tested and participate. Since then, the teams have adopted their own team names and have fun in various ways during the stretch routine. Using the daily safety/stretch routine as a forum, teams were asked to report near-hits, unsafe condi-



## Figure 3

### Case Study Results: City Agency

City tree trimmers cut MSDs by 50 percent; all injuries by 75 percent.



tions, unsafe acts and suggestions for safety improvement. The participation rates, number of safety reports and percent of reports "resolved" were tracked so that management could quickly see each team's progress.

The physical benefits began immediately. Employee testimonies report immediate reductions or elimination in tingling and numbing of fingers, low back pain, nighttime finger numbness and leg pain. They shared their routines with family members and reported using stretch techniques at home as well as at work. "Abstainers" visibly protested, but the teams pressed on.

After four months, the organization had logged 212,000 hours with no MSDs. During the same time period the previous year, it had logged 12 recordable injuries, half of which were MSDs.

**Lessons learned:** During the initial roll out, a small group of union members insisted that they were not required to participate in the stretching program. Management was concerned about the impact this situation would have on overall participation, particularly in view of the earlier failure of the BBS program implemented by outside consultants. Management and labor finally agreed that stretching would be voluntary, but that all employees must attend the stretching routine because safety training was conducted during that time.

A rift existed among the employee population. Most were dissatisfied with the tactics used by union members to stop the effective implementation of the new safety program. Union pressure was great. The startup numbers verify that only 75 percent of the workforce is engaged in the flexibility element of the new safety systems. To achieve world-class safety performance and have a shot at "best in class" among the firm's 40 U.S. facilities, management's goal is to engage at least 90 percent or more measured participation in their team-based safety systems.

The employees who actively participate in the integrated fitness, safety and leadership program will continue to improve their knowledge, flexibility and strength, and will realize the benefits of improved overall fitness. The integrated fitness, safety and leadership approach has created a major culture change among most of the workforce; this will continue to have a positive impact on the facility's injury rate, morale and overall safety performance.

"If you had told me a year ago that next year I would see 75 percent of this workforce stretching together every day, I would not have believed it—but that's exactly what's happened," says a lead safety specialist and industrial hygienist at the plant. "The morale improvement is amazing. People are feeling great and asking, 'What's next?'"

This organization will have to overcome the negative influences of a core group of union employees to reach its "best in class" goal. That status cannot be achieved when 25 percent of the workforce is actively sabotaging efforts through intimidation, false rumors and negative peer pressure. Participation in

proven safety initiatives and compliance should never be optional. Lack of compliance—on any level—should generate disciplinary action.

It is of interest to note that at a large public agency in Los Angeles maintains 100-percent participation with a union-supported program [Drennan(b)].

#### Results of Integrated Fitness, Safety & Leadership Heavy Manufacturing Plant

At a forklift manufacturing company, workers were exposed to heavy lifting, prolonged standing, working with arms overhead, bending and twisting, and constant forceful gripping. The average age of the workforce was 47. Ergonomic improvements, including monorails for moving heavy parts, had been installed; however, back injuries continued as a major source of injury and were taking a high toll on profits. A mandatory stretching and strength program was implemented using multiphased, progressively challenging routines throughout the year. Participants stretched every day and were tested each quarter for flexibility.

**Results:** Injuries were reduced by about 80 percent, and the organization has not had a lost-time back injury in two years. Employees report fewer aches and pains, and productivity has increased by as much as 20 percent.

#### University Campus

Food, residential and facilities maintenance workers at a university complex had WC claims of more than \$1 million. Employees were subjected to long periods of standing, stooping, bending, and light and heavy lifting. Most injuries were MSDs. A comprehensive flexibility and strength program was implemented and continued for one year.

**Results:** The organization reduced its WC costs by 75 percent after one year in the program.

#### Conclusion

The U.S. is in the middle of WC and healthcare crisis. If it were not for Sept. 11 and its aftermath, the cri-

By linking fitness and supervisor leadership to the safety program, the SH&E professional can increase his/her value to the organization and to the community at large.

sis would likely be on the front page of every newspaper. More than 40 million Americans are without health insurance (Associated Press). In California, 15 independent insurers/insurer groups are under regulatory action by the Dept. of Insurance (CHSWC), and according to California State Insurance Commissioner John Garamendi, the California WC system faces the prospect of bankruptcy (Reich). The impact of the unhealthy lifestyles and natural aging of 80 million Americans born between 1946 and 1964 must not be underestimated. Businesses and American society cannot continue to ignore the costs of this crisis; it will affect everyone.

Efforts to persuade individuals to adopt healthier lifestyles have largely failed due to great societal pressure. Long commutes, long work hours, convenience of fast food, single parents trying to make ends meet, living alone and lack of social support all contribute to poor eating and exercise habits.

Given the right environment, the workplace is the perfect place to acquire positive lifestyle change. People spend half of their waking lives there (Jaffe), and for many, the workplace is the most relevant community in which they participate.

Worksite fitness, leadership and safety training are not new concepts. However, integrating fitness and leadership into the daily safety program can transform these programs into a dynamic new system to prevent illnesses and injuries before they occur. Rising healthcare costs can be just as preventable with improved overall fitness. By linking fitness and supervisor leadership to the safety program, the SH&E professional can exponentially increase his/her value to the organization and to the community at large. Adding fitness to daily safety training can help minimize the affects of the natural aging process as well.

SH&E professionals must do a better job of training for safety leadership. They must set up systems to clearly define what they want supervisors to do. They must do a better job of setting up accountability systems for measuring safety performance. They must understand the role of fitness in preventing injury, and recognize the value of the psychosocial climate they establish. Finally, they must support daily systems to keep the experienced, but aging workers healthy and productive.

SH&E professionals have a moral obligation to protect employees. There may be safety in numbers, but the SH&E professional must go beyond statistical analysis. They must rediscover passion for what they do and strive to develop safety programs that capture the hearts and minds of the employees. Integrating fitness and supervisor safety leadership into the daily safety routine and creating dynamic safety teams provides a new, powerful set of tools to engage employees on a personal level. They willingly participate in safety initiatives and begin to truly care about one another's personal health and well-being. Teams gathering a few minutes every day to work on the safety of their members is a profound culture change. This safety/company culture sup-

ports all employees, and we can finally say, "we are our brother's keepers." ■

## References

- Associated Press.** "More Go Without Health Insurance." Sept. 30, 2002. <<http://www.cbsnews.com/stories/2003/01/08/health/main535672.shtml>>.
- Atkins, R.** *Dr. Atkins' New Diet Revolution*. New York: M. Evans and Co. Inc., 2002.
- Brown, M.G.** *Winning Score: How to Design and Implement Organizational Scorecards*. Portland, OR: Productivity Press, 2000.
- Buckingham, M. and C. Coffman.** *First, Break All the Rules: What the World's Greatest Managers Do Differently*. New York: Simon & Schuster, 1999.
- Bureau of Labor Statistics (BLS).** "2001 OSH Summary Estimates, Supplemental Charts." Bureau of Labor Statistics, Dec. 19, 2002. <<http://www.bls.gov/iif/oshwc/osh/os/osch0024.pdf>>.
- California Commission on Health and Safety and Workers' Compensation (CHSWC).** "State of the Workers' Compensation Insurance Industry in California: Insurance Market on Solvency." San Francisco: CHSWC, April 2002. <<http://www.dir.ca.gov/CHSWC/StateInsuranceIndustry2002/Stateinsuranceindustry042002.html>>.
- Centers for Disease Control and Prevention (CDC).** "Chronic Disease Overview." Washington, DC: National Center for Chronic Disease Prevention and Health Promotion, CDC. <<http://www.cdc.gov/nccdphp/overview.htm>>.
- Deming, W.E.** *Out of the Crisis*. Cambridge, MA: Massachusetts Institute of Technology Press, 1986.
- Drennan, F.(a).** *Case Study: 3M Corp.* Ojai, CA: Team Safety Inc., 2002.
- Drennan, F.(b).** *Case Study: Los Angeles County Sanitation Districts*. Ojai, CA: Team Safety Inc., 2003.
- Drennan, F.(c).** *Employee Satisfaction Surveys: County of Ventura, Public Works Dept.* Ojai, CA: Team Safety Inc., 1997-2002.
- Grazier, P.B.** *Before It's Too Late: Employee Involvement . . . An Idea Whose Time Has Come*. Chadds Ford, PA: Teambuilding Inc., 1989.
- Hoeger, W.W.K., and S.A. Hoeger.** *Lifetime Physical Fitness and Wellness*. Englewood, CO: Morton Publishing Co., 1995.
- Jaffe, J.** "Elusive Reach II—The At-Work Audience." *Imedia Connection.com*. Feb. 17, 2003. <<http://imediaconnection.com/content/features/021703.asp>>
- Katzenbach, J.R. and D.K. Smith.** *The Wisdom of Teams: Creating the High-Performance Organization*. New York: McGraw-Hill Cos., 1998.
- McElroy, M.** *Resistance to Exercise: A Social Analysis of Inactivity*. Champaign, IL: Human Kinetics Publishers Inc., 2002.
- National Institute of Standards & Technology (NIST).** *Baldrige National Quality Program*. Washington, DC: NIST. <<http://www.quality.nist.gov>>
- Quick, T.L.** *Successful Team Building*. New York: AMACOM, 1992.
- Reich, K.** "Garamendi Advocates Workers' Comp Reforms." *Los Angeles Times*. May 3, 2003, Sec. B:6.
- Richey, D. and F.S. Drennan.** "A Team Approach to Improve Workplace Health." *Assn. of Quality Professionals*. Las Vegas, NV, 2000.
- Satcher, D.** *Physical Activity and Health: A Report of the Surgeon General*. Washington, DC: Government Printing Office, 1996.
- "Top Ten Companies by Profit."** *Forbes*. <<http://www.forbes.com>>.
- University of Maryland.** "Statistics." University of Maryland, Dept. of Environmental Safety. <<http://www.inform.umd.edu/CampusInfo/Departments/EnvirSfty/os/erg/stats.html>>.
- Winger, J.D.** "Impact on the Workplace." San Francisco: American Society on Aging. <<http://www.asaging.org/am/cia2/boomerwork.html>>.

## Your Feedback

Did you find this article interesting and useful? Circle the corresponding number on the reader service card.

RSC#	Feedback
31	Yes
32	Somewhat
33	No