

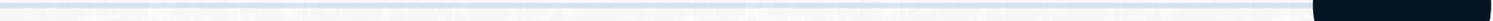
# The 5 Essential Pillars of MSD PREVENTION

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How to prevent costly injuries with a comprehensive MSD Prevention Process.

*by* MARK MIDDLESWORTH

[www.ergo-plus.com](http://www.ergo-plus.com)



# Introduction

A woman named Sarah is busy at her workstation. She can't help but wonder:

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“ Why did the company bother with that training last week when my workstation is so poorly designed that I can't help but twist awkwardly to do my job? I know I'm in the wrong position, but I can't even help it. Thanks for nothing.”

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Across the business park, a man named Frank admires the new hydraulic lift at his position on the assembly line. He begins the day, as usual, taking advantage of the new equipment provided by the company to make his job easier. But as the day wears on, impatience creeps in and he ditches the hydraulic lift in favor of simply lugging around the parts manually.

Frank's safety manager walks by and thinks to himself:

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“Gosh darn it Frank! How are we supposed to help you if you don't use the equipment properly. No wonder our injury rate is up this year.”

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Countless scenarios like the two presented above play out across the country every day of the week. Under these unfortunate circumstances, it is no

wonder Musculoskeletal Disorders (MSDs) account for such a large portion of total injuries every year.

## Where do MSDs Come From?

Musculoskeletal Disorders (MSDs) develop over the course of time as the result of exposure to many causative risk factors. Some of these risk factors relate to workplace design (ergonomics) and some relate to the individual worker themselves.

**Ergonomic risk factors** include high task repetition, forceful exertions and repetitive/sustained awkward postures.

**Individual risk factors** include poor work practices, poor physical fitness, and poor health habits.

## How to Prevent MSDs

The key to MSD prevention is to systematically reduce all risk factors that contribute to MSDs.

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A comprehensive approach that reduces ergonomic risk factors **and** individual risk factors is required for a prevention strategy that works.

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## What does this systematic risk reduction process look like?

Your prevention strategy must include these 5 pillars to be effective:

1. An Ergonomics Improvement Process
2. Employee Education & Training
3. A Proactive Early Intervention Strategy
4. Regular Evaluation & Continuous Improvement
5. Establishing a Culture of Safety & Wellness for All People

The 5 pillars presented above represent a cohesive process — if you take away one pillar, it puts more pressure on the remaining pillars. If you take away more than one pillar, well, you get the picture. The entire house comes down.

The remaining chapters of this eBook walk you through each pillar and give you examples, action steps and resources you can use to make your process better *starting today*.

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Musculoskeletal disorders are preventable! Companies in pursuit of zero have an organized process that includes all 5 pillars of MSD prevention.

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# An Ergonomics Improvement Process

Implementing a systematic ergonomic improvement process is part of your company's commitment to building a culture of excellence in workplace health and safety.

It can also be a competitive advantage for your business. The benefits of sound ergonomics are clear. Done well, an ergonomics improvement process will cost effectively reduce injury risk and make gains in productivity and worker morale possible — *a double win*.

## The Ergonomics Improvement Process

**Note:** *This section is not an extensive tutorial in ergonomics. It's simply meant to give you a broad overview and get you thinking about how to get started.*

An effective ergonomics improvement process requires a systematic approach for conducting ergonomic risk assessments for *every job in the workplace*.

The first step in this process is to develop a prioritized list of departments and jobs to evaluate. This should be based on:

- An initial facility tour and general ergonomic walkthrough audit.
- A review of injury and MSD history.
- Data and information collected from employee surveys.

Once you have a prioritized list, the next step is to conduct the assessments using the appropriate ergonomic assessment tool. Here are a few of your available options:

- The NIOSH Lifting Equation
- The NIOSH Short Form
- Rapid Entire Body Assessment (REBA)
- Rapid Upper Limb Assessment (RULA)
- Liberty Mutual (Snook) Tables

Once you have conducted ergonomic risk assessments for each job in the workplace, you will (most likely) have a long list of improvement opportunities.

## Solutions and Control Measures

These opportunities should be reviewed by a multidisciplinary ergonomics team and employees involved in the work process to decide on the best available solutions and put control measures in place:

**Engineering Controls:** Engineering solutions are the preferred method of controlling ergonomic risk factors. Engineering controls seek to enhance the physical aspects of the workplace such as workstations, tools, and equipment design or redesign. The focus is to design the job to fit the person, rather than forcing the person to fit the job.

**Administrative Controls:** Administrative solutions should be considered when cost or practicalities of engineering controls are prohibitive.

Administrative controls consider adjustments in company procedures to minimize exposure to risk factors. Examples of administrative controls include job rotation, job enlargement, modified rest breaks, providing additional employees to perform high risk tasks, and work conditioning for new and returning employees.

**Work Practice Controls:** Work practice solutions address the methods used to perform job tasks when risk factors are related to the methods selected by employees to perform physical work activities. Best practice work methods should be identified for all jobs tasks, and training of managers, supervisors and employees should insure that proper methods are understood and being utilized.



## Example

Practical, cost-effective solutions.

**Example:** A department employee survey and subsequent ergonomic evaluation revealed a high risk “problem job” and ergonomic improvement opportunity for a press operator job (pictures below) at an automobile parts manufacturing facility:



Before



After

In the employee survey, several employees identified high levels of MSD risk at this operation. Out of nine operators rating the level of exertion of this job, five rated the exertion level at nine or ten on a 0-10 scale. Injury/Illness records were reviewed for the previous three years. This review revealed that

there had been nine OSHA recordable MSDs over this period. Seven of the nine were injuries to the lower back; in addition there was one shoulder and one elbow case reported. There were 196 lost/restricted days due to these injuries, and a direct cost (medical and indemnity costs only) of \$166,428 with additional dollars held in reserve for cases remaining open. An ergonomic assessment confirmed high levels of MSD risk for the lower back due to highly repetitive side bending, and also significant shoulder and elbow risk due to reaching requirements.

The Ergonomics Team used the employee survey and injury records described above to justify the costs associated with recommended engineering controls for this task. Recommendations included purchasing 10 drop-side containers to be used internally between operations, along with two hydraulic lift tables to optimize the height of the containers at the press. This eliminated side bending of the lower back and allowed the employees to place and slide the parts, eliminating MSD risk and improving productivity at the same time. The total cost of this project was \$13,500. The estimated net benefits for injury cost savings and productivity gains at just one year were calculated at nearly \$60,000, easily justifying the capital cost of these improvements.

This ergonomic improvement reduced fatigue and risk of injury for employees, with greater productivity and lower costs for the company... **I love it when a “win-win” plan comes together!**



## Take Action

Make progress today.

**Action step:** Develop a prioritized list of departments and jobs for ergonomic risk assessments. This should be based on past MSD and injury data, an ergonomic walkthrough audit and information collected from employee surveys.



## Resources

Tools of the trade.

**Resources:** Download these resources we've made available on our website to help you (no charge).

[Step by Step Guides to our Recommended Ergonomic Assessment Tools](#)

[Ergonomic Improvement Process Flowchart](#)

[Employee Ergonomics Survey](#)

# Employee Education & Training

Your ergonomic improvement process will ensure the design of work fits each worker. But what good does that do if the employee won't use the equipment properly? Or if the employee uses improper body mechanics? Or if the employee is in such poor health they are at risk as soon as they step through the door?

Each employee needs to understand the responsibility they bring to the table with respect to MSD prevention. It is, after all, their body; and they need to take responsibility for how they use it to perform their job.

## Individual Controls

In the previous section, we talked about reducing injury risk through ergonomic controls. These controls reduced injury risk relating to the work.

This section is about **individual controls**, and these controls reduce risk by involving the worker and motivating them to use good work practices and develop good health habits.

## Education and Training

In my experience, two types of education and training are necessary for implementing individual controls that work.

**Formal Education:** Group training sessions educate team members on their MSD prevention responsibilities. Key employee training objectives should include:

- Proper body mechanics
- Ergonomics basics
- Good health habits
- Signs and symptoms of MSDs
- Basic self-care techniques

**1-on-1 Education:** The formal education must be reinforced on a regular basis out on the shop floor where the *real work gets done*. Formal ergonomics training done once per year is only effective if it is consistently reinforced with 1-on-1 time spent on the shop floor!

## You (Yes, YOU) Must Walk the Talk

Employee education programs will lose all momentum if you do not walk the talk. A safety and wellness culture will only develop if there is complete buy-in from every level in the organization. This should be exemplified most by the Health and Safety team.



## Example

Practical, cost-effective solutions.



**Craig and Brenda**

Check out those big smiles from employees who have embraced the concept of “individual controls” for MSD prevention! Craig and Brenda approached me following a recent company-wide safety meeting where I gave our *Building Wellness from the Inside Out* training presentation. They had read the book that was provided and were “sold”.

They asked me if I would watch them perform their job, and provide suggestions regarding how they could improve work methods. Together we developed and documented best practices for the job, which have been adopted across the department.

In addition, they requested additional guidance and support in helping them achieve longer term goals that they had set for adopting a healthier lifestyle and increasing physical fitness levels.

**Here's the kicker...** months later, after reaching their goals and feeling the positive effects of improved fitness and wellness, Craig and Brenda have become great ambassadors for building wellness to the workplace "family" and others who have witnessed their transformation. **And that, my friends, is how a prevention culture is built. Love it!**

Formal training in the classroom is an important starting point, as it allows us to efficiently introduce MSD prevention concepts broadly to the workforce. But the 1-on-1 practical application is where the *real work gets done* and is by far the most important part of employee MSD prevention training.



## Take Action

Make progress today.

**Action step:** If you haven't had formal MSD prevention training for employees in the past 12 months, find the earliest possible opportunity for a training session. Once the training is over, follow it up by regularly spending time out on the shop floor to make sure employees are using the techniques and principles taught during formal training.



## Resources

Tools of the trade.

**Resources:** Download the entire archive of injury prevention and wellness handouts we've made available on our website (no charge). You can print the PDF files and post them on bulletin boards, hand them out to all employees and use them for individual consultations and training.

This reinforces the objectives of formal training time, and helps employees retain the information enough to use it.

Also included in the download is a free copy of our employee workbook, *Building Wellness from the Inside Out*.

[Click here to download Handouts & Employee Workbook](#)

# A Proactive Early Intervention Strategy

Done well, an ergonomic improvement process and employee education program will significantly reduce injury risk for your company. However, employees that use their bodies to perform their job will always be exposed to a certain level of risk. A proactive early intervention process is needed to insure that employees have the help that they need to avoid pain and lost functional capacity.

When employees do experience fatigue and discomfort, the best thing they can do is report it as soon as possible. This allows time for early intervention consultations to correct the causative risk factors and decrease the fatigue and discomfort of the employee as soon as possible **before medical treatment is necessary**.

This proactive injury prevention strategy is called *early intervention*.



When an early report is made, an injury prevention specialist will conduct an early intervention consultation and provide guidance to the employee on how they can decrease fatigue and increase recovery of their musculoskeletal system.

The employee will be consulted on the following injury prevention tools and techniques:

- Preventive warm-up exercise
- Proper lifting techniques
- Proper body mechanics
- Identification of ergonomics improvement opportunities
- Preventive counteractive stretching exercises

- Proper resting/sleeping posture
- Strengthening exercises
- Fatigue recovery and sleep
- Proper nutrition and hydration
- Good health habits
- Personal fitness and wellness

By using these tools and techniques, the employee can improve their musculoskeletal health. This 1-on-1 time spent with an injury prevention specialist is the key to proactively decreasing fatigue and increasing recovery to prevent MSDs.

## Why Early Reporting is Key

If an employee is experiencing fatigue and discomfort and decides to keep it to herself, she is not doing herself or the company a favor. If she keeps shoving her issues under a rug, her discomfort will eventually develop into an injury requiring medical treatment.

The earlier she reports her fatigue and discomfort, the better the chances are of reversing the causative risk factors and preventing the injury by using the self-care tools and techniques listed above.

## Consultations Must Be Done by a Professional

Early intervention consultations should be conducted by a professional trained specifically in injury prevention and human performance such as a Certified Athletic Trainer (ATC).

In the traditional sports setting, Athletic Trainers proactively work with athletes to keep them at their highest physical performance levels. In the industrial setting, Athletic Trainers work with employees to stay at their highest physical performance level to do their job.

Although industry is not the “traditional” setting for Athletic Trainers, they feel right at home doing what they do best – preventing injuries, maximizing human performance and keeping people on the field doing their job.

***Disclosure:*** *At Ergonomics Plus, we use Certified Athletic Trainers to conduct early intervention consultations and manage our MSD prevention process, so we’re a little biased toward using ATC’s in the workplace.*



## Example

Practical, cost-effective solutions.



### Early Intervention Consultation with Kay

Kay's supervisor (Steve) noticed that something was missing that morning, her smile. Her body language seemed different as well, so he asked her if there was a problem. "Not really, it's nothing really." But Steve didn't let it go, and again he asked, "Are you sure something's not bothering you?" Kay then told him that she was experiencing some discomfort in her right arm. Steve responded, "I'm glad you told me, thank you. I'll have Mark (the onsite injury prevention specialist) come talk to you about this and we'll see if we can get you the help that you need to resolve this."

I love it when employees are encouraged by well trained and proactive supervisors to let someone know they are beginning to have a problem! For each individual who reports unusual fatigue or discomfort, potential causes are identified and corrected whenever possible. Injury prevention handouts

are reviewed with the employee and a self-care program is established to address all potential individual causative factors.

In Kay's case, potential causes were identified and a self-care program was established. She did a great job of implementing the prevention plan, and within a few days that wonderful smile was back on her face! 😊



## Take Action

Make progress today.

**Action step:** Review company procedures (not just the policy, but what actually happens) to insure that early reporting of fatigue or discomfort is encouraged. Ask employees if they feel encouraged to report such issues. If the answer is no, you'll need to correct that problem before moving forward.

Management and supervisors should be trained to proactively identify employees who are experiencing early MSD signs, and to respond positively to all employee reports.

An injury prevention specialist resource should be identified to consult with employees who report difficulty in a timely manner. Please let us know if you need any help in getting this program set up, we would love to help you.



## Resources

Tools of the trade.

**Resources:** Have you downloaded our injury prevention and wellness handouts yet? If not, you'll need them for early intervention consultations.

The same information and handouts that are available to everyone are also used during early intervention consultations to illustrate self-care tools and techniques specific to the employees' fatigue/discomfort issue.

[Click here to download our archive of injury prevention handouts](#)

In addition to the handouts, you will need a qualified professional to conduct the consultations. If it's not Ergonomics Plus, it needs to be somebody. We try not to be overly self-promotional in our content, but we do offer a free consultation to determine if our services fit your situation. At the very least, you'll get an hour of our time and we'll point you in the right direction. Sound good to you?

[Click here to get in touch](#)

# Regular Evaluation & Continuous Improvement

Every management process worth its salt is regularly evaluated with the goal of continuous improvement. Your MSD prevention process is no different.

Conducting regular reviews of your MSD prevention process will ensure you stay focused on continuous improvements and proactively reduce MSD risk factors.

**Monthly:** Review early intervention consultations, ergonomic opportunities identified, ergonomic improvements made and formal and 1-on-1 training sessions.

**Annually:** Conduct an annual audit of the entire MSD prevention process, from top to bottom. The audit should thoroughly review each element of the MSD prevention process as well as the year’s results (injury & MSD data).

The monthly reports will ensure that ergonomic opportunities are identified and solutions are implemented in a timely fashion. It should also show that most early intervention consultations are resulting in resolved cases.

The annual audit will ensure that all MSD prevention best practices are implemented at your facility, and that you are getting results out of the program.

## Show the Value of OHS, Get More Support

In addition to identifying continuous improvement opportunities, regular evaluation of the process will show the value of the program to the rest of your management team.

This will establish a record of decreased costs and improved productivity that has contributed to the company's bottom line.

Over time, these evaluations will build trust with the rest of your management team and you can gain more support for other OHS improvement initiatives you present in the future.



## Example

Practical, cost-effective solutions.

**Example:** It takes a lot of work to plan, manage and execute a best-in-class MSD prevention process. The effort is well worth it, though, when the results come in and recordables are down over 90%, costs have substantially decreased and the rest of your management team is patting you on the back. Not to mention the number of people at your company who are safer and healthier as the result of a collective MSD prevention effort.

When you get to this point of success, it would be natural to become complacent and let a thing or two slide by. Monthly reporting and an annual audit prevents that by proactively reviewing the process for continuous improvement.

As an example, the Ergonomics Plus annual audit contains a checklist over 30 pages long. There is **always** room for improvement.



## Take Action

Make progress today.

**Action step:** Evaluate your MSD prevention process. Are ergonomic issues systematically identified and resolved with cost effective solutions? Is there a schedule and tracking process for control measures?

Have employees received formal and 1-on-1 follow-up training? Do employees have a clear way to report fatigue and discomfort before it requires medical attention?

Having an outside auditor evaluate your facility is a good idea. But for today, use the Mini-Audit resource provided below to get started.



## Resources

Tools of the trade.

**Resources:** Download the Ergonomics Plus Mini-Audit to determine where your program stands today. Take just 15 minutes to answer a few questions and your score will automatically be calculated for you.

[Click here to download the Mini-Audit excel spreadsheet](#)

# Establishing a Strong Culture of Safety & Wellness for All People

Establishing a strong culture of safety & wellness for all people at your company is the number one indicator of a successful OHS program.

Injury prevention is a smart business strategy and simply the right thing to do. A comprehensive MSD prevention process will go a long way to establish a culture of safety and wellness for all people. It shows employees you *care*. The time spent educating employees and doing 1-on-1 consultations out on the shop floor is a weekly reminder that OHS is a core value. When employees arrive at work and notice the company made ergonomic improvements to their workstation, it reinforces their positive perception of the company they work for.

People appreciate a company doing everything they can to reduce fatigue and discomfort to make their lives better — and they reward the company by putting forth their best effort and taking responsibility for their part in the MSD prevention process.

When everyone truly accepts safety and wellness for all people as a core value, it creates a snowball effect that produces best-in-class results.



## Example

Practical, cost-effective solutions.

When asked, “How does safety pay at your company?” Schneider Electric CEO Chris Curtis said:

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“It’s really not about the dollars; **it’s about people**. Knowing that more than 500 people each year are safer than when we started is a great payment. It shows our employees and their families *that we care*; and when we say one injury is too many, we mean it. You can’t put a price tag on that.

Undeniably, our safety improvements also have been good for the bottom line. Our improved safety performance has generated more than \$10 million a year in direct savings to our company. We call this our safety dividend. We use it to reinvest in our people through programs like free health assessments, personal fitness subsidies, onsite fitness centers, “green” teams and other programs that encourage our people to be safe, healthy and community-minded.”

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That is an example of C-Level commitment to safety and health being played out at every level of the organization, translating into positive results for the company and its people.

***Disclosure:*** *Schneider Electric is an Ergonomic Plus client.*



## Take Action

Make progress today.

**Action step:** It's time to get mentally prepared. Safety culture doesn't change overnight. You're in this for the long haul.

Implement a comprehensive MSD prevention process for your facility including all of the pillars described above, and you'll be well on your way to changing your company's culture. The cumulative effect of these parts coming together is an MSD prevention culture at all levels of the organization.

People will notice and react to positive changes to the workplace (ergonomic controls) and to the people (individual controls). The word of these positive changes will start to spread like wildfire department by department.

**Lead by example!** As a health and safety professional, you will set the standard for the culture at your company.



## Resources

Tools of the trade.

**Resources:** How is your company's safety culture? We recently wrote an article called [25 Signs You Have an Awesome Safety Culture](#). Read that post and use it as a checklist for ways to know that your safety culture is improving.

## What Now?

Now, you're at something of a crossroads.

You may choose to pool your internal resources, develop a comprehensive MSD prevention process and manage it on your own.

You've got lots of free content from our website that will help you do just that (make good use of the resources provided above). Or you may decide you want some help.

You may want a partner with the experience, knowledge and personnel to execute a best-in-class MSD prevention process.

If that would be helpful to you, Ergonomics Plus services might be the right vehicle to help you see what the next level looks like. We'd be honored to partner with you.

Thanks for reading. And don't forget we've got a lot more free content for you, so stay tuned.

Best Regards,

**Mark Middlesworth**

*Founder, Ergonomics Plus*



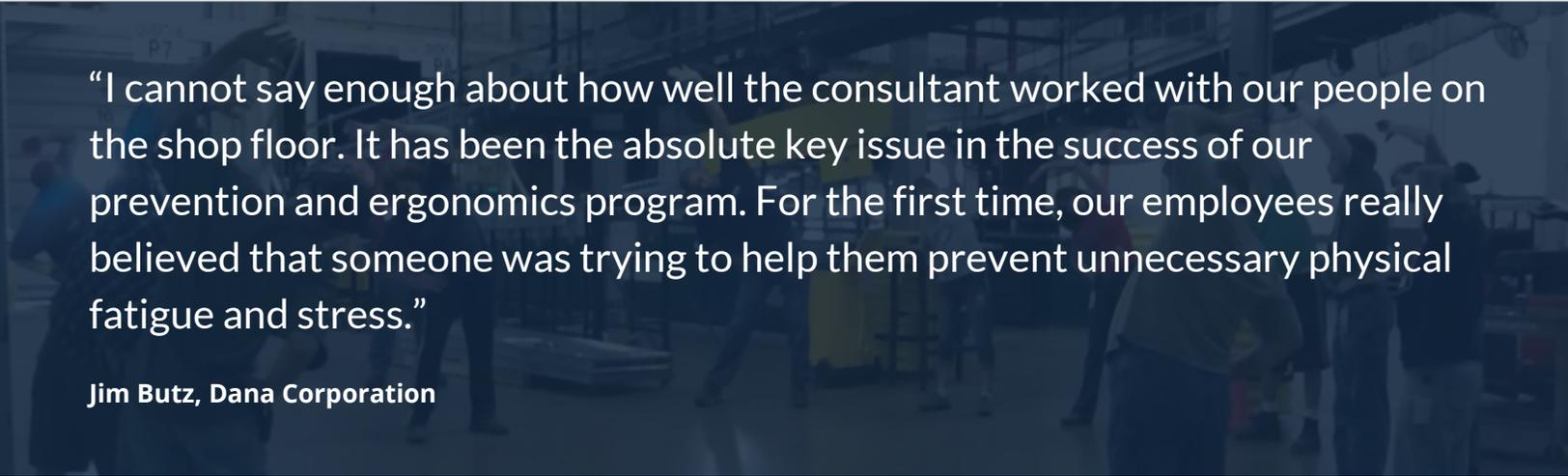
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# About Ergonomics Plus

We're on a mission to create a safer, healthier, more productive workforce. By systematically reducing MSD risk factors, we've been preventing injuries and improving productivity for clients since 1989.

Over two decades of experience has taught us that a proactive, prevention-focused approach that is comprehensive and reduces all risk factors that contribute to MSDs gets the best results.



“I cannot say enough about how well the consultant worked with our people on the shop floor. It has been the absolute key issue in the success of our prevention and ergonomics program. For the first time, our employees really believed that someone was trying to help them prevent unnecessary physical fatigue and stress.”

Jim Butz, Dana Corporation

**In a comprehensive MSD prevention process:**

- Ergonomic issues are systematically identified and resolved with cost-effective solutions.
- Employees are educated on proper lifting techniques, ergonomic principles, body mechanics and self-care tools and techniques.

- Costly injuries are averted with a proactive, prevention-focused approach (early intervention) that seeks out and eliminates worker fatigue and discomfort.

If you are interested in learning more about our proactive MSD prevention process, [get in touch with us today](#).



**Mark Middlesworth, MS, ATC/L, CEES**

Mark has been providing workplace injury prevention and ergonomics consulting services to industry since 1989. He is the founder of Ergonomics Plus, author of Building Wellness from the Inside Out and a member of the National Speakers Association.



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THINK PREVENTION

Get started with a free consultation today.

GET STARTED

A dark blue rectangular banner with a blurred background of people. The text is white and centered. At the bottom center, there is a light blue button with the text "GET STARTED" in white capital letters.