

Ergonomic Leadership: Motivating & Developing Ergonomic Behavior

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Neal Whitt may not be a safety professional but he is a high-level Ergonomics Leader. Neal is Area Manager (of three departments) at US Steel's Granite City plant. As you might imagine in a steel production facility, Neal's experienced workers engage in highly physical work that have real potential for fostering cumulative trauma disorders.

One of Neal's areas, the Brick Department, went from the worst safety record in the corporation to the best one after implementing a system for soft tissue injury prevention that increased workers' physical skills and placed them in control of their own ergonomic safety. Total injuries (first aid, OSHA recordables, lost work) went from 44 to 1 (with no lost work injuries since 2002).

As important, morale and productivity rose as well—which wasn't a coincidence. I'll discuss below some of the principles Neal applied that led to his breakthrough results.

Corporate-wide systems have also reported significant successes following these same principles.

Redesigning Perspective

For purposes of this article, I'll assume you know about basic ergonomic design principles and have already applied many of those methods and reaped some results. (If not, that's the first place to start.) But even many organizations that have implemented a range of ergonomics initiatives still may have opportunities for further improvements.

Reflecting on the state of ergonomic injury reduction in his Fortune 500 company, the then-National Ergonomics Manager confided, "We've picked off the low-hanging fruit in ergonomics." He explained that his company, with capable design experts working in concert with purchasing specialists, and ergonomists seeking and making environmental and tool

changes, had reduced ergonomic-related injuries—soft tissue strains/sprains, vibration-related problems and others. But not past a certain degree; they then found themselves on an ergonomic plateau, perplexedly stranded on a mesa of diminishing returns.

But when design and redesign have been cost-effectively applied, when extreme high-exposure jobs been changed or even minimized—yet you're still at a point of unacceptable injuries—what can you do?

Consider applying a strategic leadership approach to ergonomics. Let's look closer at what this entails.

I think of leadership as the art and science of attaining beneficial, planned results by working with and through other people.

Ergonomics literally means the science of work or energy. The Cambridge Dictionary Online explains *ergonomics* as “the scientific study of people and their working conditions, especially done in order to improve effectiveness.”

My working definition of ergonomics is “the art and science of improving the fit between people and their tasks.”

This definition logically opens up three strategies:

1. *Bring tasks closer to people*, by design, redesign, tool and equipment modifications, effective purchasing.
2. *Bring people closer to their tasks*, elevating ergonomic behavior by improving attention, perception, judgment, planning, forward thinking and a set of physical skills for avoiding forces entering and mounting in the body, to reduce likelihood of wear-down.
3. *Bring tasks closer to people WHILE bringing people closer to their tasks.*

Some definitions tend to limit ergonomics to the realm of design. But having such a limited perspective can hinder the ability to effectively lead ergonomic interventions. Ralph Waldo Emerson contended, “People only see what they are prepared to see.” This highlights the importance of framing expectations when attempting to persuade others. But this insight doesn't only apply to others—it works for us as leaders as well. What I see is what I get (remember the old saw that when you have a hammer it's easy to see all problems as nails?); conversely, as important, what I don't see, I can't utilize for attaining improved results.

Strong leaders don't continue to just do the same things—especially when they are languishing in a performance plateau. They look for ways to break the mold, to think differently, to try new approaches—sometimes even when there is no assurance they will “be right.” I've learned many things that have stood me in good stead—and hopefully helped those with whom I've worked—by trying, missing, watching and adjusting (ever hear of Tom Peter's “Ready, Fire, Aim”?). Many who know me have heard me say, “Next time, I'll make a different mistake.”

I understand the draw of trying to design out all hazards and obstacles to safety. Design sounds “scientific”, not ambiguous, doesn’t rely on the compliance of an uneven and changing and frequently-ornery or disengaged workforce. Wish it would really carry us to the promised land of high-level safety. And keep us there, for the foreseeable future.

But strategic leaders understand, as that National Ergo manager suggested, design alone (in fact, any one approach) will only take you so far. You can’t cost-effectively design out all hazards at work, and likely none at home where people are still exposed to accumulating forces. Significant redesigns are often resisted or plain not used. If you buy a \$1000 ergonomic chair that workers don’t know how—or care—to adjust, you’ve just wasted a significant sum.

In fact, I’ve seen companies purchase the right ergonomic tools, then not educate workers on how to optimally use them and injuries have actually increased. Case in point, a large company that manufactures transportation equipment. Riveters were increasingly afflicted with carpal tunnel syndrome and other ergonomic-related problems. So the decision was made to purchase high-quality (and expensive) recoilless rivet guns, which effectively incorporated an internal spring system for absorbing force. The guns were distributed—and injuries went up.

What happened? The rivet guns were a good choice, but initially weren’t well used. On investigation, riveting is a skill, that, like so many at the workplace—and in personal pursuits as well—relies heavily on kinesthetic sense. A skilled riveter “feels” the set of the rivet. When they were initially given the ergonomic guns, the riveters were, naturally enough, looking for the same kinesthetic information for correctly setting rivets. But the guns provided different feedback than what they were used to. So, to compensate, many applied additional muscle power to compress the internal spring in their new gun. They were working harder, exerting more force rather than less. Injuries and fatigue went up.

Upon assessing this situation, the safety and ergonomics specialists at this plant made the wise decision to set up a lab where riveters could experiment with the new guns to adjust their kinesthetic feel, without pressure of time or concern about destroying product. After a relatively short time, which varied among workers, they went back to the job with the new guns and recalibrated kinesthetics. And injuries and fatigued went down.

Design, equipment, tooling is extremely important, but not enough. Even with good designs, behavior has to change to accommodate and make best use of new tools and equipment. The riveting example is not an isolated one. I’ve been presenting Ergonomics seminars for ASSE nationally since 1990 (still do); during these seminars, I’ve heard many such war stories from safety professionals.

The good news is that strategic leaders work first on employing designs that are cost-effective, that provide significant impact in a relatively short time. Then they focus on enlisting higher-level ergonomic behaviors, and third, join the two. In this last stage, design focuses first on the people, rather than on the task. Often the “combo” design/behavior arena is done with significant worker input; and engineers step back from *in vitro* book designs to first consider natural design of people.

Here’s an example. A manufacturing and assembly company, like many others, had workers who moved carts laden with heavy parts. Employees maneuvered the cart by pushing or pulling on a

horizontal bar at one end. Bet you've seen this type of design many places. Lots of soft tissue injuries at this plant overall (and safety professionals agreed the carts were one contributing factor).

But after going through training on behavioral ergonomics which emphasized how very small changes in position can lead to significant reductions and loading of force in the body, workers and engineers realized that their current bar design encouraged people to push with their elbows abducted (away) from the centerline of their body. The ergonomic training helped them "discover" that abducting elbows was not merely an academic, nor theoretical scientific concept. They learned how to kinesthetically sense where aiming elbows toward the middle of their body immediately improved their balance, strength and lessened tension.

What happened next? Workers and engineers came together to change cart handles to look like a "V" (with diagonal lines separated). They knew from their training that this design—when positioned at the best angle—allowed for and encouraged workers to grab the bar and automatically maintain better, safer, stronger and more relaxed alignment.

Fatigue and injuries went down, morale went up. Reputation for safety and ergonomics improved. Receptivity for new ideas opened.

By applying strategic ergonomic leadership, it's possible to attain significant results.

13 Strategies for Ergonomic Leadership

Based on our experience in working with companies worldwide to transfer a system of skills to prevent ergonomic problems, we've seen that adept Ergonomic Leaders do certain things in common:

1. Are never satisfied with the current level of safety. They continue to push the envelope, try something new. Even when their safety record is good, they realize that, as Lao Tzu wrote, "Things that are not growing are dying." That it takes input and energy to even maintain a strong record of safety performance. Organizations and people need new input to continue to produce results at an effective level, just as healthy people have to continue to exercise and eat well. Or planners have to continuously update shifting data in order to readjust their strategies for catalyzing needed changes.

The strongest leaders are perpetually dissatisfied with the status quo, always working on continuous improvement.

2. Go beyond preset ergonomic checklists. Every workplace has something unique about its environment, tools and working conditions (not to mention its workforce).

Strategic ergonomic leaders know that ergonomics is not one-size-fits-all, that high-level performance entails more than just adjusting the external physical environment. That it's as essential to change behavior from the inside out as it is to make adjustments such as adjusting distance and position, making controls and tools mobile, padding contact points and surfaces,

suspending weights so workers don't operate as "biological clamps" (per NIOSH), and designing handles etc to promote natural alignment of wrists, neck, etc.

No question these are important interventions—and should be implemented first wherever possible—but even these require going beyond preprinted checklists towards assessing actual unique exposures in the workplace. It is also critical to encourage workers to mix static positions with movement, switching so that both sides of the body is used, close the distance between them and their tasks, to reenergize and refresh and maximize effective use of their available strength. And more.

3. Don't invest past the point of diminishing returns. One well-placed and utilized scissors lift may greatly improve ergonomic safety, but a second lift in the same place is unlikely to be of further benefit and may even lead to awkward positions due to crowding the work area. Unfortunately, I've seen lift tables installed in areas where they became a production bottleneck, where workers strained to wrestle product around or over them to avoid getting behind or shutting down equipment. When I asked why the tables had been installed, I was told, "They worked so well elsewhere in the plant, we thought they would have to help on this line."
4. Incorporate behavioral ergonomics—as addition to new designs—into all new sites. Especially when you have workers in uncontrollable environments (e.g. drivers, those who work on others turf, people exposed to the elements), place extra emphasis on developing ergonomic behaviors.

For example, Steve Slatky, Area Quality Leader with Halliburton's Energy Services Group, works with employees whose job tasks are at wellsites that are owned by Halliburton's customers, many of them major oil companies. These sites are in outdoor environments in which operators lift heavy tools and pieces of equipment, and where the walking\working surfaces are often impaired with tubulars, hoses and auxiliary equipment.

Hand injuries, strains and sprains are common risks in this kind of work (and throughout the oil industry). Steve, along with the safety professionals and workforce in general, continue to work towards refining equipment designs and procedures. But to get the most benefit from these interventions, Halliburton has also enlisted attention control and behavioral skills methods to help the work team move to the next level of hand safety.

Opening a new facility? Think beyond just the physical ergonomics. Textron Corporate Safety Training Director—and ASSE Past President—Skipper Kendrick reported that in planning for the opening of a Bell Helicopter Textron newly-constructed plant in Amarillo, the Vice-President of Manufacturing "proclaimed that all new employees be trained in their customized system for behavioral ergonomics—and we've just completed a year without a lost-time injury."

5. Train for best use of behavior whenever there are upcoming changes to designs, tools or procedures. Effective ergonomic training should:
 - Clearly point to the benefits of understanding and applying ergonomic strategies and techniques

- Offer both principles & practices that give a big picture overview and show specific applications of these principles)
- Show how to make immediate and long-term improvements
- Develop next level risk awareness and cumulative thinking
- Motivates personal responsibility and control
- Heighten kinesthetic feel for ergonomic behavior at work
- Encourage safest movements
- Reinforce best recovery methods after any initial minor injury
- Focus on attention control methods for noticing—then adjusting away from—the buildup of building tension or wear down
- Emphasize both at work and home applications
- Teach people how to monitor themselves, to make ongoing needed adjustments and to be self-reinforcing

6. *Strategically target the “right” areas for success.* Piloting a new ergonomic intervention makes sense. This can be a low-risk means for evaluating a new process with your own people, equipment and culture; it can also generate excitement and buy-in for a wider rollout.

In our experience, every company has a bell curve of:

- higher level performers (small percentage)
- lower level performers (small percentage)
- “mainstream” of relatively average performers (larger percentage).

Even companies with strongest safety records have these three groups; though their “lower level performers” might be “stars” in other organizations.

Strategic leaders match their piloting to desired outcomes. Piloting may have several objectives:

- “immediate aid” for groups/departments/areas/sites that are having problems
- demonstrate success to others within the organization in order to secure future support and funding resources (by developing in-house statistics and positive responses)
- make a neutral analysis of cost-effectiveness of a proposed intervention, for consideration for future/broader rollout

Given this, there are three kinds of strategic piloting possible:

- Relatively high-performing groups or departments. Usually these will volunteer if given an opportunity (as they are high-performing because they are receptive to try new interventions they see as potentially useful—and also see an internal demand for improvement).

The purpose of this pilot: Where you wish to show success, either to convince others in the organization that an intervention in which you have faith will indeed work in your company.

Strengths: More likely to show receptivity. Usually easier to initially put into place.

Limitations: Relatively small group. Assumption made that if an intervention works for this group, it will also work for others throughout the company (though this group is relatively small and may be atypical). If group is already doing well statistically, may be more difficult to show significant statistical improvement (e.g. if Lost Time Injury Rate is already .2, how many more injuries might realistically be prevented?). Can be more prone to skepticism ("Sure it may have worked with them, but everything works for that group")

- Lower level performers. This kind of pilot is typical for many companies (sometimes out of frustration or desire to see significant results with toughest cases). There are usually several underlying reasons that these groups have a history of lower performance (e.g. physical exposures, culture, history of management-supervisory-worker relations, certain characteristics of workers, etc).

Strengths: More likely to show statistical improvement (e.g. more "opportunity" for statistical results). If you can show success even with a "difficult" group, this can be persuasive to many throughout the company. A successful pilot here can also immediately boost statistical record by stemming some of "the bleeding."

Limitations: Often more difficult to put intervention into place, greater resistance. Like High-Performer pilot, assumption is made that if an intervention works for this group, it will also work for others throughout the company (though this group is also relatively small and may be atypical).

- "Most representative" groups. This kind of pilot targets the middle of the bell curve.

Strengths: Results will most likely apply to the bulk of a company's employees. Therefore, this may be a better opportunity to evaluate cost-effectiveness of an intervention.

Limitations: Important to find most-representative sample (vs. from higher or lower edges of bell curve) for best evaluation. Results may be open to skepticism as to whether they apply to higher-performance or lower-performance groups.

7. *Measure results strategically*, in order to make a business case for ergonomics.

A strong ergonomics intervention should aim at and reach several simultaneous objectives:

a. *Financial, for significantly reducing costs*

- Contrast sites that have piloted an ergonomic intervention with to similar "control" sites that haven't.
- Before-After Comparison. Compare the costs/record of the company or a site before they implemented an ergonomic initiative to a comparable period after implementation. This can be compared either mid-term or longer-term.
- Compare results attained with statistically-expected costs/injuries. For example, Skipper Kendrick of Textron wrote: "We originally gave ergonomic training to employees who were 'accident repeaters' with soft tissue injuries. Our previous statistics indicated that 17% of all 'repeaters' would have another soft tissue injury

within one year; of those we trained, only 3% had a repeat injury – this is an 82% improvement.”

- Compare implementation costs with expected cost-savings. For example, many organizations have shown management that their planned ergonomic intervention only had to prevent 2-3 back injuries to pay for itself. This was apart from a range of organizational returns.

b. Organizational critical, intangible impacts of successful an ergonomic intervention may include:

- Boosting credibility by quickly addressing a problem area
- Deflating potential pushback from group with concerns—by providing a real, tangible skills (mental and physical) and practical strategies that workers and others can feel and embrace
- Demonstrating consistency and commitment to safety efforts by providing practical, positive approach with immediately-usable methods
- Redirecting attention toward safety and safe productivity, during times of distraction or uneven morale (e.g. labor negotiations, organizational uncertainty, etc).
- Boosting involvement through workers-as-safety-catalysts
- Increasing individual expectation of personal control and responsibility for safety
- Improving reputation of Safety as interesting and personally useful
- Elevating receptivity to organizational thrusts and change
- Influencing positive safety and health behavior at work and at home (with positive impact on health cost reduction)
- Energizing and inspiring overall workforce
- Bringing all groups together with a common set of methods and “safety language”, that are interesting and applicable to all

8. Motivate ergonomic behavior, rather than just expecting workers to “do what’s in their own best interest.” Leaders do this by showing the personal benefits of ergonomics, going beyond “this is good for the company safety record.”

Also be sure to enlist the power of kinesthetics (remember the riveters?). You may have seen studies on behavioral learning and change that shows the smallest group of people acquires skills by listening (studies I’ve read indicate 10%). A slightly larger percentage (25%) learns visually – through watching or reading. But by far the largest group of people (65%) learns kinesthetically, by trying things on, feeling their impact. For example, we’ve found over and over again that if you want to improve hand and wrist safety it’s much more effective to help workers experience what an aligned wrist feels like, rather than just showing or telling them to “keep your wrists straight/aligned.” Besides, even with those who are interested and want to comply, a well-aligned wrist can look very different from person to person, depending on musculature, pre-existing conditions, etc.

And kinesthetics can ably serve to reinforce and anchor policies and procedures into place, turning them from “academic rules” into self-protective methods.

9. Transfer critical skills for ergonomic injury prevention. These injury-preventing skillsets incorporate:

- Mental abilities (seeing own level of accepted risk, directing attention at will, recalling policies /procedures /techniques, understanding and applying underlying ergonomic principles, team orientation, forward thinking to envision future repercussions), and
- Physical skills (honing alignment and position for most effective force transfer, maximizing leverage to maximize effective strength, heightening balance, eye-hand coordination, boosting flexibility/range of motion, fatigue reduction, breath control and effective preparation and recovery methods)

All of these are trainable skills that can be learned, to a usable degree, by everyone.

10. *Enlist everyone to become his or her own ergonomics leader.* Tom Peters, in an article in FastCompany magazine wrote, “The strongest leaders don’t create followers; they create other leaders.” Be sure to activate everyone from senior management (see my past articles in Compass and elsewhere) to bargaining unit heads to line staff as ergonomics leaders. Train them. And set realistic and high expectations for effective judgment and behavioral improvement.

Remember that Neal Whitt is an Area Manager who became involved in ergonomics because he was determined to make significant improvements, and by ably recruiting others to further the charge.

11. *Focus on changing ergonomic behavior at home as well as at work.* Emphasize 24-hour ergonomic safety. Because many sprains and strains are cumulative in nature, it's important to change people's behavior at home as well as at work. And because people are predominantly creatures of habit and won't lift one way at work and another at home, it's important to develop safe, default behaviors they can—and want to—use everywhere.

Sometimes there is worker resistance to their being shown how to work more ergonomically (e.g. “the company is just squeezing me to do the work of 3 rather than 2 people”, “Trying to lay off more workers?” etc). In some places, “ergonomics” has a poor reputation due to negative past associations. But you can often create default habits by first showing off-work applications. Train all on making better ergonomic decisions in personal purchasing, protecting loved ones, becoming better at their favorite activities.

Imbue them with the motivation and skills to make significant improvements in their own life—at work and at home.

12. *Think cumulatively, help others do the same.* An instant-ergonomics-fix mentality (remember the back-belt trend of several years ago?) is as costly to leadership credibility as are get-rich-quick schemes to our bank account. In both cases, someone *else* seems to be the party that profits.

Cumulative trauma disorders may take months or years to develop; turning them around can be done in months, but not days. Focus on small adjustments in our tool use, position, etc that can make a big difference over time in reducing tension, and promoting personal wellbeing.

13. *Deputize a core group to become ergonomic change agents.* Think of adopting a scissors approach to ergonomic change—simultaneously top down and bottom up. We've seen dramatic results in ergonomic safety blossom when workers are well-prepared and given the responsibility for first training their peers, then coaching them on the floor (often informally) and regularly reinforcing ergonomic behaviors and skills.

While US Steel's Neal Whitt was indeed a driving force for ergonomic safety, he didn't make a 180° turnaround by himself.

In the same vein, Johnson & Johnson EHS Director Ranae Adey has applied this strategy for excellent results – training selected peer ergonomic change agents, then providing the time and support to catalyze behavioral improvements. To the extent that other plants within the company have continued to benchmark her planning and process. Ranae remarked, "It was like we added fourteen people to the Safety Office."

And through training hourly workers as peer ergonomic catalysts, another US Steel plant, Gary Works (Indiana), has had statistical and cultural results that one senior manager deemed "miraculous."

Organizations throughout the world have reported sterling results. Engagement of peers serving as highly trained leaders and reinforcement agents can show exciting and powerful returns.

Of course, there's a lot more to leadership and to ergonomics than can be covered in this article. And every company has unique exposures and cultures; the most powerful and sustaining solutions have to be customized to that organization (we've found that even plants or departments within plants have unique needs and cultures).

While ergonomic injuries continue to plague companies throughout the world, I've seen dramatic successes in many organizations when leaders have utilized these principles. Applying a strategic leadership approach to ergonomics can catalyze substantive improvements in individual safety and overall organizational strength.

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