

# Use Leading Indicators to Derail Ergonomic Injuries

## Part 1: Preparation Strategies

By Robert Pater

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Groundbreaking leaders know that being proactive is more effective and efficient than addressing problems after they arise. They understand that success in any venture is based on first setting the right course, then getting to the desired destination.

Strategic planning and implementation rely on discerning timely feedback, then making small, ongoing course corrections. Both pieces are necessary to efficiently achieve prime results. In addition, identifying the correct early indicators of success helps to set objectives and reveals whether the organization is on the right track.

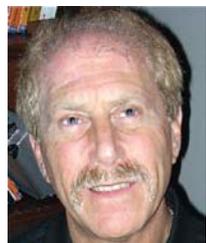
Forming and employing leading indicators is an essential key performance indicator (KPI). When trying to reduce ergonomic-related injuries, it is a good idea to try a more proactive approach that goes beyond rehashing old habits. Despite attempts to curb them, ergonomic injuries such as strains and sprains are at the top of compensable injuries. Still, many companies have not applied leading indicators to such pervasive problems. Perhaps this is because it is too difficult or time-consuming. This two-part article is specifically designed to help this process.

For perspective and planning, first assess the limitations of trailing indicators, which are often scoped by most companies as the primary default measure. Examples of these metrics are frequency rate, lost-time incident/injury rate, days away from work, job restrictions and job transfers, total recordable injury rate, lost-time injury frequency rate, and total recordable incident rate or severity rate.

Lagging indicators solely reflect the past. Their ability to predict results is reminiscent of the widely stated financial caveat that past performance is not an indicator of future outcomes. Trailing safety metrics may be even less useful and more inaccurate where someone adjusts them to make performance appear better than it is. Further, the data are usually too general to help determine what went wrong.

*Power* has been defined as the ability to change the future. Leaders must realize that trailing indicators will not likely provide guidance on how to most effectively prevent future incidents. General, after-the-fact reports are even less useful for understanding and preventing cumulative trauma compared to other injuries.

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For example, if a workforce experiences numerous soft-tissue injuries, leaders might implement different strategies to help fix the problem based on analysis, benchmarking or just belief (e.g., a colleague swore by it, they read about it, it requires relatively little cost or effort). But how do leaders know they are making progress? What if the selected strategies only minimally help or increase soft-tissue injuries?

For instance, several clients report that after widely distributing back belts, their incidence of lower back injuries spiked. New PPE may result in more recordables (e.g., one large manufacturer initially saw a sharp rise in vibration-related upper limb injuries after providing workers recoilless rivet guns until they enlisted leading indicators). Good intentions do not always pay off with good results.

Trailing/lagging indicators can provide overview data and typically must be reported to regulating agencies. These can have value in comparing sites or companies within the same industry (assuming that incident reports are filed consistently). But the information they provide is typically general and also too little, too late to make a difference in proactive injury reduction. Some leaders commit significant resources to tool, structural, training and other changes that do not work and by the nature of the delayed time that lagging indicators take to reveal results, leave the company and leader way out on an unsupported limb.

### Why Lead With Leading Indicators?

Leaders can better strategically formulate and select the best leading indicators by understanding their multiple purposes. All leading indicators can track small signs of progress, which allows small adjustments, rather than trying to make major, perpendicular course corrections. Ed Eckardt, senior manager, system safety data at United Airlines, says leading indicators help workers and professionals to “look at data that lead to higher risk.”

Knowing and understanding such information can save embarrassment and prevent loss of credibility by making small changes easier, rather than waiting for the failures that lagging indicators reveal. In contrast, a small-changes mind-set is critical to understand and prevent cumulative trauma injuries.

As discussed, ergonomic leading indicators should also become objectives. Similar to road signs along an unfamiliar path, leading indicators provide reassurance that newly instituted changes are being driven in the right direction. This is crucial to maintain the support of skeptical employees or executives waiting to pull the plug on new initiatives they were wary of.

Leading indicators also reinforce changes. Then again, leading indicators can provide insight into difficult-to-glean cultural and other below-the-surface organizational signs of well-being. Caleb Trease, health and safety PTW senior specialist with Kinross Gold Corp., says that because his company values ongoing commitment to safety, leading indicators are critical for maintaining a continuous finger on the pulse of changing safety perceptions and actions.

The best leading indicators directly mark an increased use of desired, safer actions. For example, rather than just charting whether workers attend ergonomic training, it is more effective to note whether they apply principles and techniques from the seminars to their work.

### Obstacles to Ergonomic Leading Indicators

When most leaders think of ergonomic injuries, they default to soft-tissue injuries (e.g., strains, sprains, musculoskeletal disorders, cumulative trauma disorders, repetitive strain injuries). Statistics from numerous insurance companies and government agencies corroborate the prevalence and costs of these problems, which only seem to worsen as a workforce ages.

Admittedly, the nature of ergonomic injuries makes it challenging to develop and chart leading indicators, which are best monitored at preinjury levels. However, soft-tissue ergonomic issues are difficult to note at such low levels because 1) most people experience some level of soft-tissue discomfort and, therefore, tend to write it off as no big deal or just part of aging; 2) many have not learned how to self-monitor the buildup of physical tension; 3) external focus on completing the job can override mounting issues; and 4) some leaders have an acute bias and think soft-tissue injuries are suspect.

Many forces that erode physical functioning can seem below the radar and almost invisible. Yet such small, regularly penetrating forces can cause significant damage. Other invisible ergonomic risk factors include the lack of movement from prolonged sitting, standing in place or holding tools for extended periods (NIOSH cautions against workers becoming biological clamps). Off-work exposures, although out of company sight, add mounting tensions toward wear down. Autonomous and dispersed workers are mostly out of sight, making it less likely to directly observe what and how they perform tasks.

The work of changemaster Kurt Lewin (who developed field theory or force field analysis) shows that the most efficient way to generate sustained improvements is to assess, then reduce restraining forces. In other words, remove or reduce obstacles to change.

Applying an acute mind-set to cumulative problems is a significant barrier to successfully employing ergonomic leading indicators. This is often done unconsciously by default. But ergonomic-related injuries are distinct from acute ones. The latter result from a single significant source of energy that ends in an incident. For example, a driver skids on ice and hits a tree, or a worker's finger is nipped because the cutter dropped unbraked.

This does not mean acute injuries have only a single contributing factor; there are likely many contributors to any incident, from poor directions to training to faulty machine design to work-site distractions. But what makes these incidents acute is that the injury ultimately occurred from one high-velocity or impactful event.

In contrast, ergonomic-related injuries are cumulative in that damage occurs after multiple exposures, any of which seem to be no big deal, performed many times without a problem. But, physical stresses mount each time. Think of either the straw that broke the camel's back or of metal fatigue, where one last bend shears the metal, but only after numerous other small stressors. This is borne out by experience and is usually the result of the concentration of forces from multiple exposures in a relatively small body part (e.g., lower back, neck, shoulders, wrists, knees, ankles).

Sleep problems can be a similar example. Modest sleep deprivation may cause numerous negative effects. But, according to a recent study in *Scientific Reports*, even minute amounts of light, as low as 5 lux (about half as bright as twilight), during sleep can have pronounced negative effects on cognitive health (working memory and decision making). The effects are cumulative: Multiple night exposure to such very dim light compounds these problems. Interestingly, the study reports "lack of symptoms does not mean being unaffected." In essence, subjects in the sleep study were still impaired even though they did not consciously detect that they were affected. This finding also applies to cumulative trauma injuries: Warning signs almost always exist if a person is inclined and able (trained) to sense them.

Deterioration builds in ergonomic injuries, often unnoticed, until it erupts into potentially significant problems. Managers who do not understand the process of mounting tensions in soft-tissue injuries often become frustrated, calling resulting injuries stupid or blaming workers.

The successful development of ergonomic leading indicators is based on attention to early warning signs of potential problems and their corresponding positive readjustments. This applies on two levels: 1) to leaders strategically building safer organizations who become attuned to company leading indicators; and 2) to individuals



noting their own physical tensions so they can make small changes to better protect themselves. Such self-monitoring is a critical skill for the detection and aversion of ergonomic problems. Employees can find the motivation and learn the skills needed to do this quickly.

To elevate to another level of perception and planning, move away from associating repetitive motion exposures as the only or main generators of cumulative soft-tissue injuries. Granted, noting repetitive motions is a step up from assuming a single heavy or highly awkward lift was the cause of an overexertion injury.

But while repetitive exposures are more obvious, they are only one type of cumulative risk. Soft-tissue injuries may develop from different actions that add tension to a body part over time, and this typically comes from more than repetition. A combination of any motions can accumulate physical stresses.

Think of Newton's first law of motion: For every action, there is an equal and opposite reaction. Employing even small amounts of force to move or manipulate objects also causes forces to enter the body. These can accumulate over time, ultimately resulting in the wear down of the body.

For example, people can experience debilitating lower back pain where what precipitated the injury was something they had always normally done, such as bending over to pick up a piece of paper, sneezing or coughing. Years of such insignificant, below-the-radar or invisible exposures done in less than efficient ways can mount into short-term disabling or even lasting soft-tissue problems. Understanding this progression, then developing leading indicators to watch for these and their solutions is critical to achieve significant strides in soft-tissue safety.

### Seven Elements of an Ergonomic Leading Indicator Strategy

Developing ergonomic leading indicators is a strategic process and worthy of the effort necessary to rise above ergonomic injury plateaus. Here are seven elements to consider.

1) Think of leading indicators as road signs that mark progress toward the desired destination. One effective way



to develop such markers is to think backward, beginning with the desired end results, then rewinding to see precursors, implementations and actions that led to it. Remember that leading indicators are not an end in themselves. They are tools to move to the ultimate goals of greater safety, which will be discussed in part 2 of this article.

2) Determine the factors (e.g., human, task, organizational/structural, communication, environmental) that contribute to the ergonomic injuries in a company. Awareness of these factors can lead to forming leading indicators (e.g., noting levels of decreases or improvement in these contributors).

3) Develop ergonomic objectives. What actions do you want to see displayed, words spoken (or reduced), reports made that would lead to greater ergonomic awareness, decision making and better use of skills?

4) Determine the obstacles to setting up, monitoring and using ergonomic leading indicators toward injury reduction (e.g., too difficult to monitor, too bureaucratic to report, too time consuming), then decide how to reduce them.

5) Understand that anything can be a metric and that there are many ways to gather such data (e.g., through observation, personal interview, written reports, verbal perceptions of coworkers, machine measurements). Do not restrict yourself to others' criteria in advance; these should be customized to your company. Move away from the as-

sumption that only scientific measurements are accurate.

6) Create an easy-to-implement feedback system. Develop time- and labor-efficient ways to note indicators at their earliest possible levels. How can you best report on what you have found to many levels in the company? What changes do you have to make in language when informing executives versus supervisors?

7) Look for momentum. What do the leading indicators point out about the company's movement? To what degree are you heading toward the desired direction? How fast is this happening?

Part 2 of this article will focus on a 4-step process for developing and using ergonomic charting metrics, and offer numerous examples from the three main types of ergonomic leading indicators. This will also include successful applications from several companies in diverse industries.

### Conclusion

Leading indicators are vehicles for driving toward reducing onset, progression and negative effects of hampering pain and disabling injuries. Ultimately, experience shows that if leaders aim for remarkable ergonomic improvements, they must first develop the vision to see such problems at the earliest possible levels, then take the right corrective actions. Act before the organization becomes overexerted from a mounting weight of soft-tissue and related injuries.