

PARTNERING TO PROTECT THE INDUSTRIAL ATHLETE

Tech startups, insurers and industrial organizations can leverage connected wearables and data to deliver a triple win: safer workers, lower insurance costs and greater productivity



EXECUTIVE SUMMARY

Workplace injuries continue to cost companies and their workers' compensation insurers billions of dollars each year—the US Occupational Safety and Health Administration (OSHA) estimates the annual direct and indirect costs of lift-related injuries alone top \$56 billion. Yet the combination of a new generation of industrial wearables, big data and smart algorithms promises to change this picture for the better.

These technologies have the potential to deliver more accurate risk assessments and the data to support precise interventions that can reduce injury in the workplace. Workers' comp insurers and industrial organizations can benefit from partnering to drive these solutions into the workplace—in the process, decreasing claims, keeping industrial workers protected and productive, and bringing down costs across the board.

INDUSTRIAL ATHLETES™ AND WORKPLACES HAVE EVOLVED—SO MUST WORKPLACE SAFETY

Workplaces such as warehouses, factories and construction sites have evolved at speed over the past 15 years as new technologies and innovative processes have enabled organizations to optimize the performance of their workforce and productive assets. So too have industrial athletes, who are today tech-savvy consumers living in a connected world of on-demand mobile apps, personal wearables and smart-home sensors.

But this wave of technology-driven change has yet to bring meaningful transformation to how organizations optimize the safety of industrial athletes, workers who perform tasks that place heavy physical demands on their bodies. The methods most often used to monitor and evaluate ergonomic conditions and onsite safety have not changed significantly in decades:

- The average industrial site is subjected to between one and 10 targeted evaluations by ergonomists per year, which is unacceptably low.
- Sensors used to monitor whether ambient noise complies with OSHA regulations are expensive, must be administered by a human and do not accurately represent the exposure of each individual athlete.
- Most organizations are not keeping pace with the speed at which their operations are changing and monitor only a small portion of the changes in the workplace.
- Current monitoring methods are not effective for tracking the impact of workforce changes such as seasonal hires, new recruits, and employee terminations.
- The impact of conditions such as time of year, temperature and customer volume on the workplace and workers is not adequately tracked.
- Organizations continue to evaluate and address risk as a one-to-one equation: 100 workers require 100 hard hats, or 100 ear protectors, 100 sets of knee pads, or 100 OSHA-approved vests. This is expensive and does not address the need for different equipment to address different risk exposures.

The outcome is that injury levels in industrial workplaces have remained static since the late 20th century. According to Economic Policy Institute statistics, the direct and indirect cost of all workplace injuries and illnesses in the US is more than \$250 billion a year.¹ Companies also face significant safety-related costs in the form of penalties for violating OSHA regulations. That is despite the estimated \$4,000 organizations spend annually per worker on injury prevention.

Workers' comp insurance: new challenges incoming

Workers' comp insurers are also lagging their counterparts in the life and personal lines auto sectors with regard to the effective exploitation of technologies such as Internet of Things devices for risk engineering and mitigation. They continue to rely on worker job codes and other static criteria to assess injury risks and to price policies. This might not be enough to ensure growth and competitiveness in the future. The sector—the largest segment of the US commercial insurance market—remains profitable, but workers' comp insurers cannot afford to be complacent.

According to a report from Moody's Investors Service, the US workers' comp sector has improved significantly since 2011 as the domestic economy has strengthened and as the labor market has grown. But Moody's warns that rising competition could lead to margin compression in the years to come.²

The sector may face further headwinds as labor shortages and an ageing workforce result in the recruitment of a less qualified and trained industrial workforce, and hence, the risk of higher benefit payments. Older workers, who are at higher risk of many classes of injury than younger workers, may also be encouraged to postpone retirement.

Dr. Richard Victor, the former CEO of the Workers' Compensation Research Institute and current senior fellow at the Sedgwick Institute, forecasts a 55 percent increase in the number of workers' comp claims by 2030. This could see the costs (including inflation) of workers' comp triple in the same timeframe.³

With challenges rising for workers’ comp insurers and industrial organizations alike, an episodic approach to evaluating workers’ risk of injury is not sufficient. Leading organizations should be looking at how they can leverage the Internet of Things and analytics tools for continuous monitoring of workplace injury and productivity risks. This can help them to vastly reduce injuries and achieve a deeper understanding of the workforce and workplace.

New sensors and wearables enable continuous monitoring to protect the industrial athlete

Over the past five years, wearable computers, Internet of Things sensors, and other devices have started to revolutionize how people and organizations gather information and interact with the world. Consumers use health wearables such as the Fitbit or Apple Watch to track health and fitness indicators and improve their performance. Organizations, meanwhile, use Industrial Internet of Things sensors for applications such as preventative maintenance of expensive plant equipment, optimizing asset life, reducing costs and minimizing downtime. Now, the advent of platforms such as StrongArm Technologies’ FUSE Risk Management Platform promises a similar revolution in the monitoring of worker health and safety.

With the FUSE Risk Management Platform—including an Internet of Things device for the worker—an organization can monitor, assess and intervene in workplace health and safety

concerns with more speed, capability and accuracy than ever before. Such a solution provides a single continuous source of risk and safety information on every employee, during every shift, in every single facility.

The FUSE device is an all-in-one sensor that collects data about multiple ergonomic and environmental risk factors that vary throughout the work day in a fast-paced industrial workplace. Paired with the platform, it provides metrics that help inform an organization’s safety and deployment decisions.

Companies in the US spend \$42 billion on safety training and equipment each year.

The FUSE platform uses machine learning to capture and analyze the risk of musculoskeletal injuries. It collects individual industrial athletes’ workplace safety data and collates it in one central platform—allowing for multivariate analyses in real time. It can quickly, accurately, and effectively detect high risk work zones and user groups.

Continuous monitoring versus infrequent measurement

Rather than generating infrequent measurements with expensive, manual measuring devices, the approach is to continuously monitor health and safety risks with a sufficient level of accuracy to

Today’s wearables can deliver more frequent workplace and health and safety data at a lower cost than traditional methods.

SAFETY RISK ASSESSMENT	TYPICAL FREQUENCY OF ASSESSMENT		TYPICAL ASSESSMENT COST	
	FUSE	Traditional industry method	FUSE	Traditional industry method
Ergonomics	12.5/second	1/year	\$50 per user per month	\$20,000 device, \$20,000+ assessment
Air quality	1/second	1/quarter	Included	\$5,000 device, \$10,000+ assessment
Noise exposure	1/second	1/month	Included	\$2,000 device, \$10,000+ assessment
Heat stress	1/second	1/month	Included	\$750 device, \$10,000+ assessment

Note: Costs are estimated from typical third-party consultant fees for facility-wide assessment.

make informed decisions. This translates into a significant cost saving, while delivering actionable, real-time data. Such an approach to continuous monitoring identifies risks that infrequent measurement will not be able to pinpoint.

89 million workers in the US are exposed to the risk of preventable injury.

StrongArm's data shows that traditional methods of evaluating injury risk have a 23 percent margin of error, compared to just 5 percent for the FUSE platform.

Some scenarios include:

- Identifying continuous risk exposures such as having a bathroom located next to a loud machine.
- Noting differences in ergonomic safety on different days of the week or month.
- For several clients, StrongArm is tracking the safety of novices compared to more experienced co-workers. The solution provides continuous monitoring and personalized evaluations, providing real-time haptic feedback to individual workers using the StrongArm FUSE wearable.
- Using real-time haptic feedback to alert workers to unsafe conditions or behavior.
- Evaluating why safety scores drop in certain conditions. For instance, one StrongArm client discovered that unsafe behavior on certain afternoons was a result of people frantically trying to catch up after a long lunch break.

At another client, a Fortune 50 logistics provider, the FUSE solution flagged incidents when an industrial athlete who normally performed well suddenly showed three days of unsafe behavior, culminating in a back injury. The company is now able to identify this sort of behavior and intervene to prevent the resulting injuries.

Meanwhile, one of the world's largest manufacturing companies rolled out the FUSE platform at several of their facilities to help identify which members of their workforce were behaving in a manner that put them at a particularly high risk of injury. By alerting them to the risk and helping them correct their behavior, the organization achieved a 46 percent reduction in injury risk and the associated cost.

For a company at the higher end of the cost and incidence range, the annual cost of lower- back injuries is \$828,000 per 100 employees.

In another instance, a fulfillment center owned by a US e-commerce giant used StrongArm IoT sensors to pinpoint the exact conveyor line that was contributing most to musculoskeletal injury risk across its workforce. A simple change of orientation on the line improved productivity by 17 percent and decreased injuries by 62 percent. The improvements can be continuously quantified over time.

Wearables for industrial athletes and an analytics platform for industrial workplaces can offer the following actionable data.

DIAGNOSTIC

The key variables that constitute safety risks in a given worksite, saving organizations the costs, time, and inaccuracies associated with ergonomic/safety guesswork.

PREDICTIVE

Postural and safety data collected by the on-the-body device whenever the wearer moves. Algorithms project trends from the collected data, generating predictive insights on safety performance.

PRESCRIPTIVE

Not only algorithm-driven descriptions of workplace safety challenges, but also recommendations for effective interventions that generate significant ROIs.

THE OPPORTUNITY FOR WORKERS' COMP INSURERS

OFFER MORE VALUE AND UNDERSTAND RISKS BETTER THAN EVER BEFORE

Today's insurers are increasingly seeking to provide 'living services' to their customers, often working together with ecosystem partners such as technology companies. Living services are tailored insurance offerings that predict and react to customers' changing needs and circumstances.

In other words, branded services that are personalized and change in real-time for every individual or organization, wherever they are and whatever they're doing.

Insurers—ranging from personal carriers in life, home and auto insurance to commercial carriers—are looking for ways to extend their value to customers while assessing and pricing risk with ever-higher levels of precision. For example, in life and health insurance, carriers such as John Hancock offer perks to customers who meet exercise goals while using fitness trackers.

Many auto insurers around the world use real-time feedback from vehicle telematics to coach their customers about good driving habits. And some commercial insurers are looking at how preventative maintenance of industrial equipment in mines, factories and other plants—guided by sensor data and intelligent automation—might help reduce insurance claims for damaged equipment or business interruption.

In addition to offering insurers a way to gather rich, real-time data that they can use to make better underwriting and claims decisions, such solutions enable carriers to extend their relationships with their customers, help their customers manage risks better so that they don't need to claim, and even to tap into new revenue streams.

Since this type of continuous monitoring has proven its worth in fleet auto insurance and other sectors, should insurers not consider bringing it to the world of worker's compensation? New technology and partnerships offer opportunities for workers' comp insurers to work with commercial clients and tech companies to reduce health and safety risks in the workplace while optimizing costs for everyone in the value chain.

By collecting accurate safety data about individuals across a workforce, insurers and their workers' comp clients can locate injury risks more accurately and address them before workers are injured. The immediate benefit for the insurer will come from cost reduction—fewer severe injuries will translate into lower loss costs.

Workers' comp insurers could also access sensor data to get more wide-ranging information about a workforce and its environment to inform risk assessment. Their predictive analytics and actuarial sciences team would be able to better understand and infer risk levels of organizations. Thus, they could more accurately price and manage short-term liability. Because insurers would have more and better data at their fingertips, they would need fewer risk engineers to manage the same network of customers.

Even better, they could use the same pool of risk engineers to engage more deeply with clients than they could in the past and help them to further reduce their risks. For example, they could encourage a client to make ergonomic workplace changes and then compare the safety scores before and after the intervention.

But perhaps the most significant advantage for workers' comp insurers is the opportunity to embed themselves deeper into their customers' operations and reduce churn. A partnership between a tech platform provider like StrongArm and an insurance carrier could enable the insurer to craft a compelling 'living service' that forms a significant barrier to competitors.

A NEW WAY OF THINKING ABOUT WORKERS' COMP COVER AND INDUSTRIAL WORKPLACE SAFETY

In the Accenture Technology Vision 2018 survey, 87 percent of insurers agreed that businesses are, through technology, weaving themselves seamlessly into the fabric of how people live today.⁴

The tech industry, workers' comp insurers and industrial organizations have a unique opportunity to partner to deploy smart, integrated continuous monitoring solutions that will improve business performance and worker quality of life by addressing the financial and human risks and costs of workplace injuries.

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StrongArm Technologies is the leading industrial safety science company, delivering a tool that can help actively manage industrial workers through data driven, client-specific insights. Working with a number of Fortune 100 clients across categories, StrongArm has proven it can reduce the financial and human cost of unaddressed industrial risk, and deliver significant investment returns to clients.

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