

## The Rising Interest of Exosuits

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### **THIS TREND IN WORKFORCE WEARABLES PROVIDES A WELCOME LIFT TO TIRED WORKERS & HEAVY WORKLOADS.**

A few years ago, I worked with a warehouse stocker named John who had injured his back and was looking to return to full duty. His job was important to him because he had a family to support, which included taking care of an adult son with special needs.

Working as a morning stocker, John was on his feet for 8 hours, pushing and pulling pallet jacks full of goods, constantly lifting, bending, and reaching, to stock his aisles before heading home to help his son. It's no surprise that John became one of millions of Americans who missed time at work because of back pain.

John agreed to try using a back-assist exoskeleton while on modified duty. I trained and supported him throughout his transition from modified to full duty. He used the exoskeleton until he no longer had any work restrictions from his doctor, and he was approved for full-duty work. He said he could feel the exoskeleton reducing strain in his back when he was bending and lifting. The assistance truly worked. Then, one day, John returned the exoskeleton. Even though he said it worked, he didn't want to use it anymore.

Why? While there was no doubt that the exoskeleton helped, John said it prevented him from doing his job and moving the



way he wanted. He couldn't get close to the items he needed to reach because the exoskeleton interfered. He couldn't move in tight spaces and in between pallets because the exoskeleton stuck out too far around his body and got caught on shrink-wrap.

It helped relieve back strain, but that didn't matter because it got in the way.

### **Restrictive Wearables Face an Uphill Battle for Adoption**

John's story is a powerful lesson: if you are thinking about adopting new technology or new wearables for your construction workforce, physical assistance is not the only important factor. Whether it's an exoskeleton that provides physical support or sensors that promote a safer workday, if

wearables prevent construction workers from doing their job how they want to, adoption will be an uphill battle.

That's why comfortable workforce wearables that don't restrict freedom of movement are more practical for many industries, especially construction sites. Construction workers need to be able to quickly adapt to any challenges they face to get their job done, which means they need full mobility, and zero distractions.

Lightweight, soft exosuits that are built to comfortably fit any body type and be worn all day have incredible potential to help workers who frequently bend and lift. Those are also the kind of workers that need protection. The wear and tear from the frequent forces and awkward postures their spines must endure during all that bending and lifting really adds up physically – not only over the course of a single day, but over the course of a career.

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## Exosuits & Smart Sensors

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The good news is there are many new wearables for construction companies wanting to find ways to protect their employees without sacrificing production.

Companies have started using workforce wearables, including rigid exoskeletons, or “soft-shell” exosuits, to lower the forces that increase the risk of chronic pain. Dutch-based logistics company Geodis began using passive exoskeletons for back support in 2017, and DHL published a report saying that soon delivery people “will be using exoskeletons to safely lift heavy weights.”

These companies and others are using exoskeletons and exosuits that are already on the market and have been scientifically proven to reduce back strain, fatigue, and risk of injury from bending and lifting. But as exhibited in John's story, it's critical that they are comfortable and don't restrict freedom of movement.

There are exosuits being implemented that are specifically designed to provide assistance without impacting mobility or comfort. When it comes to the sensor side of workforce wearables, both Walmart and Toyota are testing devices that alert workers who are engaging in risky movements. These devices collect data to give employers insights into which

jobs, tasks or workers have the highest levels of injury risk, so that workplace design or equipment changes can be made to improve worker safety. They also provide feedback to workers to train them to avoid risky postures and movements. The testing found a reduction in injury risk across North America using the sensors.

But while exosuits must give user's freedom of movement to be adopted, sensors have their own user-adoption hurdles: the “creepy factor” that some workers may feel toward data collection – including privacy and workplace-surveillance concerns.

These challenges are being addressed by sensor providers and companies through privacy features, proper training, and awareness among workers.


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## Tackling an Expensive Workplace Injury Problem

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The rise of workforce wearables is exciting because they could help fight a major problem on construction sites: work-related musculoskeletal disorders (WMSDs). The Occupational Safety and Health Administration (OSHA) said WMSDs are frequently the cause of lost or restricted work time and the annual cost from back pain domestically is \$253 billion, according to the Bone and Joint Initiative.

Amazon has started to direct financial resources to combat WMSDs with its WorkingWell program and Jeff Bezos has said that the company needs to tackle workplace injuries. They had reason to emphasize warehouse safety: Amazon recorded 5.6 injuries per 100 workers in 2019, while the (still-too-high) national average for the warehousing and storage sector was 4.8. Workforce wearables can help protect workers who may be at-risk of suffering WMSDs, which could turn into chronic pain. But a major hurdle in the “War on WMSDs” is enthusiastic buy-in from the construction workers to properly use the wearables.

With stories like John's, adoption will be a much easier if the wearables are comfortable and maintain mobility. To enjoy the assistance of workforce wearables, workers must be willing to wear them. When workers feel comfortable using a wearable and quickly see the difference it makes by improving their quality of life, the way physical work is done can change forever. 



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### About the Author

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### About the Article

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