

INJURY CASE STUDY

THE PROBLEM

Back pain is the leading cause of disability in 160 countries (World Health Organization)¹. Overexertion at work costs U.S. businesses \$12.8B annually (Liberty Mutual)², and is one of the leading causes of back pain and other musculoskeletal disorders. Back overexertion injuries are particularly common among warehouse workers and other material handlers who perform repetitive bending and lifting with heavy objects, often moving tens of thousands of pounds daily.

¹ <https://www.who.int/news-room/fact-sheets/detail/musculoskeletal-conditions>
² <https://business.libertymutual.com/insights/2024-workplace-safety-index/>

THE SOLUTION

Exosuits are a rapidly emerging safety technology proven to reduce back strain and physical demands when bending and lifting. Dozens of academic and industry studies have validated the biomechanical effectiveness of HeroWear's exosuits, which typically take about 20-40% of the load off the user's back muscles, reduce fatigue by up to 40%, and reduce spine compression forces for users.

Likewise, surveys of hundreds of HeroWear's thousands of users consistently demonstrated workers feel less work-related discomfort and report lower work-related fatigue after using the Apex 2.

20% - 40%
of the load off
the user's back muscles



Scan the QR code to read more on the Apex

ROI

Try your data in our ROI calculator at HeroWearExo.com

Average cost of a back injury (OSHA) **\$67,000**

x 10.5 avoided back injuries per year

\$3.5 million
in net ROI over 5 years

2.4 X ROI in Year One

16.5 X ROI Over 5 Years

THE STUDY

Customers implemented the Apex 2 exosuit in four select U.S. distribution centers.¹ Exosuits were in use for an average of 8 months when injury data were aggregated. After deploying HeroWear Apex 2 exosuits, over 281,000 hours of injury data were collected and analyzed, along with additional operational and worker-reported metrics. This database is equivalent to 140 full-time employees working for one year, while regularly wearing exosuits, and is estimated to encompass 50-60 million lifts by workers. This is the first large-scale, longitudinal injury data released on elastic (non-motorized) back exosuits.



THE RESULTS



10.5

Number of back strain **injuries expected** in 281k hours of work based on historical data



0

Number of back strain **injuries reported** during 281k hours of exosuit deployment

Zero? Really? “We started this journey expecting to see injury reductions, and people have been asking for longitudinal data on exosuit impacts for years. We also wanted to estimate injury rate reductions with the Apex 2. But back injuries dropped to zero in this dataset which is great for workers at these DCs but not great for computing ratios like injuries per hour worked. Ultimately, this is a good problem: we will gather even larger, longer-term datasets because workers wearing exosuits aren’t getting injured often.”

– Dr. Karl Zelik, HeroWear co-founder and Chief Scientific Officer



Scan the QR code to download this case study

“We take pride in protecting our hard-working warehouse pickers. The data proves how HeroWear’s product is truly changing the game. We look for innovative ways to improve the quality of our team members’ lives, and HeroWear is helping us do that.”

— Phil Heide, URM Director of EH&S

WORKER FEEDBACK

25%
decrease
in work-related
bodily discomfort



“My performance is better now. I’m less tired after work and back is not tired at all, how it was before the HeroWear. [sic]”

20%
reduction
in work-related
fatigue



¹While these distribution centers only represent a small fraction of HeroWear’s client and user base, they were uniquely suited for this type of injury study because each company had similar job roles (order selectors) and historical and longitudinal injury data that could be shared, de-identified and pooled together to begin to understand the long-term health and safety impact of exosuits in warehousing and logistics.