

# APEX By HeroWear

EXOSUIT

## The Science Behind the Exosuit

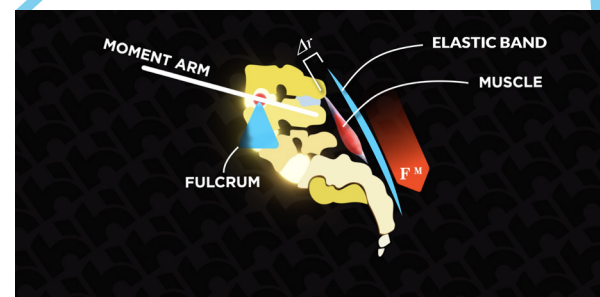
Born from rigorous science and fitted to the human frame, the Apex is a back-assist exosuit researched, developed, and tested in the lab at one of the world's leading research institutions. Its lightweight design is functional and effective, assisting the worker's back and sustaining their strength to reduce their risk. All without motors or batteries.

See how the Apex effectively combines comfort with performance.



## Discover How the Apex Works

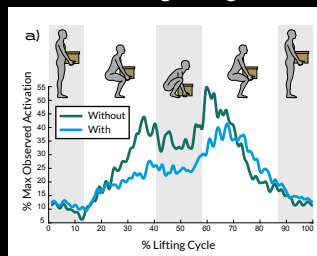
The Apex employs passive-elastic bands that act in synergy with the major muscle groups responsible for bending and lifting. The exosuit's design uses the advantage of an extended moment arm to decrease total forces in the system, meaning the same work can be done with less total force applied.



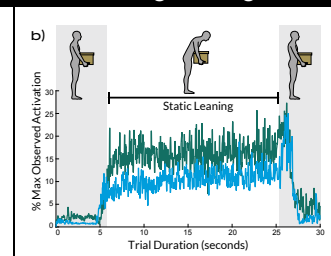
## See Results From the Lab

The ability of passive-elastic components to significantly reduce back-muscle activity and fatigue rates has been effectively demonstrated in peer-reviewed science.

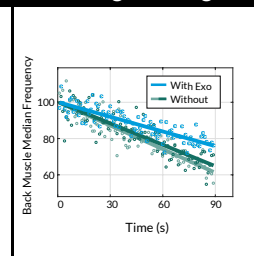
15-20% reduction in back muscle force during lifting



20-40% reduction in back muscle force during bending



30-40% reduction in back muscle fatigue during bending



**Check the Research:** 1. [Assistance to Reduce Back Loading \(Lamers et al., 2018\)](#), 2. [Effects on Back Muscle Fatigue \(Lamers et al., 2020\)](#), 3. [Characterizing Comfort Limits \(Yandell et al., 2020\)](#), 4. Modeling Overuse Injuries (Edwards, 2018), and 5. Musculoskeletal Disorders as a Fatigue Failure Process (Gallagher, 2016)



10% Reduction in peak forces



50%-80% Reduction in microdamage

## Reduce Risk of Injury for Workers

In total, the HeroWear Apex exosuit reduces about 15%–40% of peak muscle forces applied. Studies have proven that just a 10% reduction in peak forces can result in a 50–80% reduction in microdamage to tissue—and it's the accumulation of microdamage that often leads to overuse injuries like muscle strains and stress fractures.

With back pain costing our healthcare system over \$100 billion a year for medical care, workers compensation payments, and time lost from work, the Apex offers working men and women worldwide the assistance they need to sustain strength and improve safety.

Learn More at [HeroWearExo.com](https://www.HeroWearExo.com)