ERGONOMIC DEBT IN THE WAREHOUSE

By **ProGlove**

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Executive Summary

Logistics stands at a pivotal moment. Across the UK and the US, warehouses and factories are being asked to move more, faster, with greater precision, all while relying on a workforce that is shrinking and increasingly harder to retain.

At the heart of this challenge lies a hidden force that shapes every shift and every worker's experience. Ergonomic Debt. This debt accumulates when tools, workflows, and environments are not designed for the people using them. It compounds through repetitive strain, poor posture, outdated technology, and processes built around legacy systems rather than human capabilities. Its effects have long been viewed through the lens of safety metrics or lost productivity, but the true cost is far greater. Ergonomic Debt is directly eroding workforce participation and retention.

The conventional assumption has been that there is a trade-off between efficiency and worker well-being. That improvements in safety slow operations, or that prioritizing ergonomics adds cost without a measurable return. The evidence paints a different picture.

The safest warehouses are actually the most productive. organizations that integrate ergonomic design into their tools and processes see higher throughput and fewer errors, but their impact reaches far beyond productivity alone.

In a sector where recruitment is costly and retention increasingly fragile, investing in ergonomics sends a signal. It shows workers they are valued and improves a warehouse's ability to attract and keep talent. Ergonomic innovation is creating the conditions where people can perform at their best, consistently and sustainably.

Ergonomics is emerging as an enabler of both operational efficiency and workforce stability. The organizations that recognize this will shape the next era of logistics, built around people as much as performance.

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OUR **KEY FINDINGS**

Most warehouses today have embraced digital transformation in some form. From Warehouse Management Systems (WMS) adopted by 75% of operations, to Barcode and RFID scanning technologies used by 62%, and wearable tech utilized by 30% of organizations, the building blocks of a modern, data-driven warehouse are firmly in place. But while they've promised greater visibility, higher productivity, and operational control, many warehouses are still falling short of realizing these benefits.

Despite these investments, operational disconnects remain a persistent and costly challenge. 60% of warehouse leaders admit their systems remain partially or entirely siloed. The reasons are all too familiar:

Ergonomic debt is invisible to most leaders - but its impact is everywhere

- **66%** of managers have never heard of ergonomic debt
- **68%** say workers missed shifts due to work-related pain or fatigue
- **22%** of warehouse managers report losing 31+ days of labor to ergonomic issues in a single year

Ergonomic strain is directly fueling absenteeism and turnover

- **36%** of workers missed shifts due to pain or fatigue
- **50%** took 4-6 sick days
- One in four managers lost **11-20%** of staff due to injuries

Outdated tools are actively slowing down operations

- A staggering **96%** of managers say outdated tools slow them down
- **73%** of managers do not consider their current tools ergonomic

Workflows and tools are not designed to prevent injuries

- **37%** of managers say their workflows are not designed to prevent RSI or MSK injuries

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Chapter One:

How Ergonomic Debt Shows Up on the Warehouse Floor

The cost of Ergonomic Debt is often described in terms of lost productivity or increased injury rates, but its most profound impact is human. In warehouses and factories across the UK and the US, workers are carrying the burden of outdated tools and poorly built environments that have not been designed for the realities of modern logistics.

The European Agency for Safety and Health at Work has long recognized musculoskeletal disorders (MSDs), caused by repetitive motions, as the number one cause of lost or restricted work time in the sector. Each case costs more than $13,000 directly, several times that indirectly, yet these numbers only hint at the daily experience of the people behind them. Ergonomic Debt is a lived experience that shapes fatigue, well-being, career longevity and ultimately the stability of an already shrinking workforce.

Modern warehousing is physically intense in ways that many organizations are underestimating. **31% of workers regularly lift more than 46 pounds (21 kg)** - a load repeated hundreds or thousands of times each week. **45% perform more than 21 lifts per hour, with 15% exceeding 61 lifts per hour.** These levels of repetition dramatically accelerate MSD risk: continuous flexion, twisting, and high-frequency lifting cause injury over time.

Even seemingly simple tasks, such as scanning or picking, carry hidden strains. Research from The Fraunhofer Institute for Manufacturing Engineering and Automation IPA has shown that traditional pistol-grip scanners increase wrist flexion, shoulder elevation, and pinch grip force, turning thousands of daily scanning motions into an ergonomic burden.

Workers are feeling the brunt of this. **64% report lower-back pain,** more than one in four experiences wrist or hand pain, and approximately one-third suffer from generalized fatigue. These are not occasional discomforts - they are classic symptoms of chronic musculoskeletal stress. 54% of workers rate themselves as quite a bit to extremely tired after a typical shift - a level of fatigue that can reduce reaction time, increase human error, and raise the likelihood of injury. More concerning is the direction of travel, with 80% stating their physical strain is worsening over time. Ergonomic problems in logistics are rarely static. They build cumulatively, creating a pipeline of future injuries.

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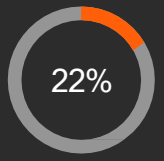
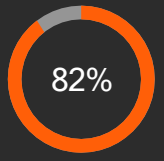
These symptoms impact a business's capacity just as much as they directly impact workers. **36% of workers report missing shifts** in the past year due to work-related pain or fatigue. Half took between four and six sick days for those reasons, and an additional 15% took between seven and fourteen. Added together, these absences represent a massive productivity drag. Once injury and fatigue reduce shift attendance, throughput drops, overtime rises, and the cost of temporary employment surges. At the same time, outdated tools make everything harder. 91% of workers have felt slowed down by poorly designed, outdated tools.

Beyond sick days and lost hours, talent loss poses an even more significant threat. 73% of workers say they would consider leaving a job because of physical strain, for a workplace that prioritises physical well-being more. It can cost an average of 25% of a warehouse worker's salary to replace that member of staff. When tools and processes exhaust people, organisations risk a significant financial hit and losing their most valuable resource - experienced workers.

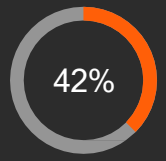
Yet despite these impacts, most organizations lack visibility into the problem.



Only **22%** measure or log repetitive strain injury (RSI) or musculoskeletal (MSK) injuries, and **32%** measure nothing at all.



82% of workers have never even heard the term ergonomic debt, reflecting a broader organizational blind spot.



say they receive no ergonomic training, and another 27% say training was a one-off event - insufficient for shaping long-term behaviour or safe movement patterns.

Traditional tools and workflows continue to reinforce this. Legacy scanners, repetitive manual handling tasks, and outdated picking processes expose workers to risks that accumulate over time, with 53% using a pistol-grip handheld scanner as their primary input method. Multiplied across thousands of motions per shift, these designs fuel injuries, fatigue, absenteeism and turnover.

Ergonomic Debt is widening the cracks in a workforce that is already under pressure. The first step to retaining people and remaining productive begins with tools and environments designed for human bodies, not inherited processes and outdated tools. Ergonomics is increasingly becoming paramount for the long-term sustainability of both businesses and the industry as a whole.

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Chapter Two:

The Awareness Gap Holding Back Resilient Operations

While Ergonomic Debt is experienced most directly by frontline workers, it is shaped by the decisions of warehouse managers. These leaders carry responsibility for productivity, labor allocation, shift coverage, and operational efficiency. Yet many lack the information and tools needed to address the risks before they become injuries, sick days, or resignations. This results in a widening gap between what workers experience on the warehouse floor and what managers perceive, perpetuating preventable strain and undermining the long-term stability of the workforce.

Contributing to this is a critical awareness gap, with more than two-thirds of managers having never heard the term “ergonomic debt.” Without the vocabulary to identify the issues at play, the challenges of strain or suboptimal tool usage remain unresolved - flagged only after they escalate into measurable losses. In many facilities, ergonomics is still viewed as a compliance requirement, rather than a strategy to improve performance. This disconnect slows down the adoption of modern tools and keeps outdated equipment in circulation far longer than intended.

Managers themselves acknowledge the operational drag caused by legacy systems to an event greater extent than warehouse workers. **96% feel slowed down by outdated tools, and 73% do not consider their current equipment to be ergonomic.** In comparison, 8% more workers than managers rated their tools as non-ergonomic, at 81%. This is significant because when leaders recognize that tools create friction, but lack the framework or mandate to address it, ergonomic debt accumulates. It manifests not only as worker discomfort but as inefficiency embedded into every action.

This awareness gap becomes even more apparent when looking at injury-related absences. Managers report substantial impacts on attendance: **67% say team members missed shifts due to work-related pain or fatigue in the past year.** This absenteeism creates an operational burden that affects shift planning, throughput, overtime budgets, and customer commitments. Yet despite these consequences, many managers still lack the ergonomic insights needed to prevent issues before they result in missed shifts.

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Those with insights into ergonomic processes advocate for its benefits. One survey respondent stated:

"Ergonomics is essential for employee comfort, health, and productivity. Simple improvements like adjustable workstations and posture guidance can prevent strain and injuries. Investing in ergonomics shows leadership's commitment to a safer, more supportive workplace."

The data on lost workdays is even more striking. When asked how many days their teams have collectively lost due to ergonomic strain, managers reported:

lost between **6-15** days.

lost **16-3** days.

lost **31** days or more.

For any warehouse manager, this represents a significant loss of capacity, removing weeks of labor from already stretched teams. As ergonomic injuries are cumulative, these days lost are symptoms of deeper systemic issues, rather than isolated incidents.

Turnover amplifies this further. A quarter of managers say they lost 11-20% of staff due to injuries, and 16% lost more than 21% of staff in the past 12 months alone.

The cost of hiring and onboarding a single warehouse worker is estimated at thousands of dollars when factoring in recruitment, screening, training, lost productivity, and the time required to reach full proficiency. High turnover also erodes team cohe-sion and increases training load for remaining staff, creating a cycle where experienced workers carry more of the strain.

Perhaps most revealing is how few managers feel they operate in a truly preventive environment. When asked whether workflows in their facility are designed to prevent RSI or MSK injuries, 39% said "no" or "not really", with another 13% unaware if this was the case. This demonstrates the level of warehouses still relying on legacy systems rather than human capability. Without systemic ergonomic considerations, managers are left to firefight symptoms instead of addressing the root cause.

While most managers care deeply about safety and performance, they are constrained by legacy tools, limited ergonomic literacy, and operational pressure to prioritise short-term output over long-term resilience. The result is a workforce experiencing rising strain and a management layer seeing only fragments of the full ergonomic picture.

Closing the awareness gap is essential. Providing warehouse managers with the information and tools to recognize ergonomic debt, beyond accident and injury reports, enables them to intervene sooner and redesign workflows to reduce the hidden costs of turnover and absenteeism. For logistics to scale sustainably, ergonomic intelligence must become a managerial competency.

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Chapter Three:

Designing Work Around People to Unlock Performance

After years of treating injuries, absenteeism, and turnover as inevitable operational burdens, the logistics sector is beginning to recognize that organizations must take action to protect an already dwindling workforce. If Ergonomic Debt is created when tech-nology and processes demand more from workers than the human body can sustainably give, then the solution lies in flipping the script and designing work around humans first.

Across warehouses today, the prevailing reality remains unchanged. Workers continue to use heavy, outdated tools in suboptimal environments. Pistol-grip scanners prevail across warehouse floors. The devices require awkward wrist angles and repeated force to scan and regrip. Ergonomic risk is woven into the fabric of the workday.

Despite widespread strain and rising costs, most facilities fail to introduce wearable glove scanners or other human-centric ergonomic tools, even though these technologies are proven and widely available. This gap represents a significant opportu-nity in the sector to deploy tools that improve efficiency, increase productivity and dramatically reduce worker strain and fatigue.

Human-centric wearables have the potential to transform a warehouse floor. Modern wearables reduce micro-movements, minimize grip force, and eliminate the repetitive twisting and flexion associated with handheld devices. They streamline motions and free the hands for safer picking and handling. The impact is not only physical. When workers feel less pain and friction in their tasks, they work with more consistency and accuracy. These benefits can be felt across operations, gener-ating fewer errors, smoother flow, and higher uptime.

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But the most overlooked benefit of ergonomic technology is talent.

IMPROVEMENT
in overall performance

In a competitive labor market, the ability to attract and retain skilled, experienced workers has become a defining competitive advantage. With the working-age population shrinking, every preventable resignation has a compounding cost. This is where human-centric technology can become a strategic differentiator. When 73% of workers say they would consider leaving a workplace that prioritises physical well-being, it signals a workforce that is not only aware of the strain they endure but actively searching for employers who take their health seriously.

Visibility matters. When an organization invests in ergonomically designed tools, workers see it and feel it every day. They interpret it as a sign of respect, care, and long-term commitment - a competitive advantage that can mean the difference between retaining valuable employees and succumbing to workforce shortages.

The performance benefits reinforce this message. ProGlove customers consistently report measurable efficiency gains - up to six seconds saved per scan and a **20% productivity boost,** and, more crucially, a 95% approval rating from the workers themselves. These numbers demonstrate a parallel improvement in efficiency, worker safety and sentiment. This approval metric signifies that the technology is reducing strain and giving them greater control and agility in their tasks.

SPAR Austria provides a compelling example. After introducing ProGlove's wearable scanning solution, the company achieved a 15% improvement in overall performance. But what stood out most was not the metrics. It was the feedback from the floor.

Team members spoke about feeling more valued. They described the freedom of movement, the reduction in fatigue, and the sense that someone had finally considered their bodies and daily reality in the design of their tools. That emotional response builds the foundation of loyalty. It transforms technology from a device into a symbol of care.

Ultimately, the solution to Ergonomic Debt is not a quick process fix or another training module. It requires a mindset shift. It is the recognition that tools must adapt to the worker, not the other way around. Human-centric wearables, workflow redesign, and ergonomic innovation allow warehouses to scale without adding headcount, boost productivity without burning out teams, and build workplaces where people want to stay. Warehouses must design for humans first, and the results will follow.

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Conclusion:

Ergonomics Is Now a Strategic Imperative

The data across this report reveals a logistics sector in need of transformation. For years, warehouses have absorbed the rising costs of injuries, strain, absenteeism, and turnover as though they were inevitabilities of the job. These outcomes are symptoms of Ergonomic Debt, a systemic design problem created when tools and workflows fail to align with human capability. Like any debt, the longer it accumulates, the more expensive and disruptive it becomes.

Across the UK and US, this debt is now colliding with structural labor shortages and aging workforces, putting immense pressure on the industry. Workers are feeling the strain physically, and managers face the downstream impacts of missed shifts and escalating recruitment costs. This sends ripples throughout entire operations, decreasing productivity and resilience. Yet most facilities still lack visibility into the root cause. **If 66% of managers have never heard the term Ergonomic Debt, and 73% do not consider their tools ergonomic,** it is unsurprising that symptoms are being treated while the underlying conditions persist.

Compliance checklists and one-time training only offer temporary solutions. Tools and processes must be fundamentally redesigned around the workers using them.

This requires shifting from legacy equipment and fragmented processes to human-centric technology and ergonomically intelligent workflows. This data demonstrates that wearable scanning, lightweight tools, adaptive workflows, and digitised ergonomics offer a strategic investment in productivity, safety, and workforce resilience.

The results speak for themselves. **When organizations adopt ergonomic innovation, they see measurable gains.** From faster processes, fewer errors, improved attendance, to stronger morale, and reduced turnover. Workers feel the difference immediately. They experience less fatigue, less strain, and more autonomy. In a sector where 73% of workers say they would consider leaving a workplace that prioritises physical well-being, this becomes a differentiator for attraction and retention.

Ultimately, these findings prove that ergonomics can form the bridge where human well-being and operational efficiency meet. The safest warehouses are the most productive. The happiest workers are the most consistent. And the organisations that design work around people position themselves for long-term performance and resilience.

Solving Ergonomic Debt prepares organizations for the logistics landscape of tomorrow, where protected workers and resilient operations define industry leadership. Those who embrace this change early will create environments where people can thrive and, in doing so, shape the next era of human-centered industry.

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About ProGlove

Founded in 2014, ProGlove is a Munich-based technology company providing industrial wearable solutions that enable human-centered productivity across global operations. Through a powerful combination of ergonomic hardware and intelligent software, ProGlove helps frontline teams work safer, healthier, and more efficiently.

Today, more than 2,000 customers worldwide rely on ProGlove to increase productivity, safety, and quality across warehousing, logistics, manufacturing, and retail environments. ProGlove solutions make it easy to capture and analyze operational data directly at the point of work - turning everyday motion into actionable insights.

ProGlove's customers include leading global organizations such as BMW, DHL, Gap Inc., and Lufthansa Technik Logistik Services, who use ProGlove to optimize workflows, reduce strain, and improve overall operational performance.

Headquartered in Munich, Germany, ProGlove operates internationally with additional offices in Chicago (USA), Coventry (UK), and Belgrade (Serbia). The company employs more than 250 people from over 30 countries, united by a shared mission: to build technology that puts people first and transforms ergonomic challenges into measurable business value.

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www.proglove.com Email: info@proglove.com Phone: +1 (312) 481-7862 (US) | +49 (89) 26203500 (Germany)