



DOCK SHOCK:

The Impact of Whole-Body Vibration on an Aging Workforce

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**WHITE
PAPER**



AN AGING WORKFORCE IS MORE LIKELY TO BECOME INJURED OR DISABLED ON THE JOB. BY MANAGING CHRONIC WORKING CONDITIONS SUCH AS WHOLE BODY VIBRATION CAUSED BY DOCK SHOCK, EMPLOYERS CAN MINIMIZE COSTS WHILE ENHANCING PRODUCTIVITY.

AN AGING WORKFORCE

EMPLOYMENT AMONG PEOPLE AGED 55 AND OLDER HAS INCREASED TO AN ALL-TIME HIGH OF 40 PERCENT.

Information from the U.S. Census Bureau suggests that by 2016, one-third of the total U.S. workforce will be age 50 or older. By 2020, workers over age 50 will be 115 million strong.¹ Retirement is increasingly further on the horizon or even non-existent for today's workers. According to AARP, 7 in 10 workers who have not yet retired plan to work into their retirement years or never retire.¹ Whether their motivation is due to reduced retirement portfolios, increased life expectancy, or a desire to stay engaged with their organizations¹, one thing is for sure: the unprecedented aging of the world's population and a strong correlation between aging and disability create a challenge for many industries and employers.¹

THE COST OF A DELAYED RETIREMENT



High-impact, repetitive work like operating a forklift can lead to increased disability rates, particularly among older workers.

As the workforce ages, the incidence of disability rises. A recent study by the University of Wisconsin's Trace Center showed that American disability rates are more than 20 percent for workers aged 45 to 54 and approximately 42 percent for workers 65 and up.¹ A third of all U.S. workers have at least one chronic health issue, and the percentage is higher among older employees. Workers older than 50 miss on average 11 more days of work per year compared to their younger counterparts.²

BY THE NUMBERS:

- 1/3** Total U.S. workforce age 50+ by 2016
- 11** More days per year missed by workers 50+ compared to under 50
- 70** % of workers who plan to work into retirement or never retire
- 20** % of workers aged 45 to 55 with a disability
- 42** % of workers aged 65+ with a disability
- 15** Highest estimated % of payroll that goes to disability

Despite having positive attributes such as higher levels of engagement, more productivity, and stronger customer relationships¹, older workers increasingly represent serious bottom-line expense and profitability issues for employers². According to Kristin Tugman, senior director of health and productivity at Unum, a provider of disability insurance, recent statistics suggest the cost of disability is about 8 to 15 percent of payroll. Due to the aging population, she estimates that these statistics could increase up to 37 percent over the next 10 years. "Particularly in manufacturing and physically challenging occupations, employers are recognizing the clear impact of continuing repetitive, hard labor," she said.²

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THE OHIO STATE UNIVERSITY STUDY

Through a process called “disability management” or “productive aging programs,” companies are anticipating the changing needs of an aging workforce through job analyses that target specific activities or work functions. If the work activity can be modified to accommodate physical or cognitive demands, then accommodations can be made available to all workers. Making the changes universal helps reduce the stigma associated with needing assistance.¹

Today, safety-minded businesses are partnering with universities to study the impact of certain activities on their workforce. Researchers from The Ohio State University recently conducted a small study to examine the health risks to forklift operators from vibration exposure at the loading dock³. The study examined several factors that were thought to potentially contribute to discomfort in employees’ lower extremities when driving stand-up fork trucks in and out of trailers. This included the type of forklifts used and the surface condition between the warehouse floor and the bed of the truck. The study set out to determine if vibration exposure could be reduced if standard forklifts and dock levelers were replaced with new shock absorbing forklifts and newly reengineered dock levelers.



An accelerometer affixed to a fork lift operator's lower leg measures tibial shock.

Data for the study was collected via accelerometers that were affixed via a self-adhesive wrap to the lower legs (over the shin bones), of three participants. The accelerometer measured the amount of tibial shock when crossing from the warehouse floor to the trailer. Additionally, the participants stood on an electronic scale while using the forklift to obtain the ground reaction force. Data was collected as the

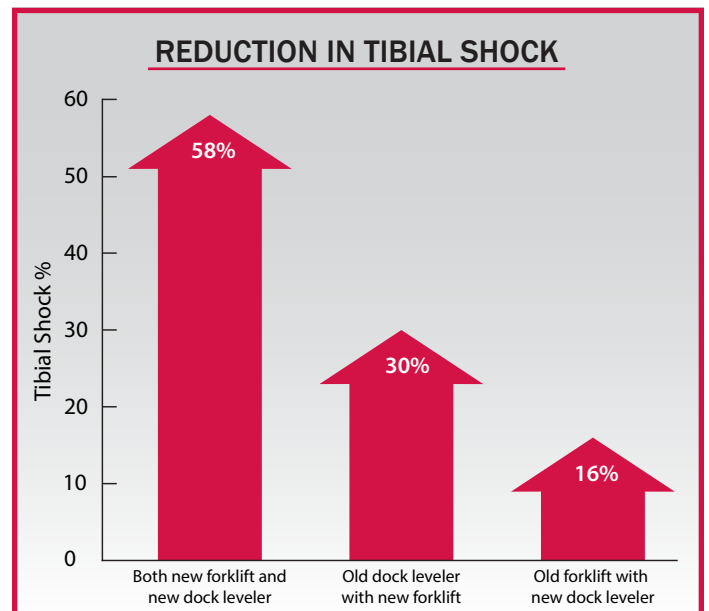
drivers entered and exited the trailer with both empty and moderate loads. The maximum speed of the forklifts was limited to 6 mph.



A forklift operator exits a semi-trailer during a “dock shock” study conducted by The Ohio State University.

The results showed that tibial shock was reduced 16 percent when using existing forklifts with a newly reengineered dock leveler (Rite-Hite Dock Leveler with Smooth Transition). The use of new forklifts resulted in a 30 percent decrease of tibial shock as compared to the old forklift and old dock leveler configuration. Using both the new forklift and the new dock leveler reduced the tibial shock by 58 percent.

The study concluded that there were sizable differences between the two levelers, suggesting that the addition of the newly reengineered Rite-Hite Dock Leveler with Smooth Transition could reduce the shock experienced by the operator. The combination of the new forklifts and the reengineered Rite-Hite Dock Leveler with Smooth Transition resulted in the largest combined reduction of tibial shock exposure.



RITE-HITE DOCK LEVELERS WITH SMOOTH TRANSITION TECHNOLOGY CAN SIGNIFICANTLY REDUCE DOCK-SHOCK



RITE-HITE DOCK LEVELERS

Rite-Hite Dock Levelers serve as a bridge between the loading dock floor and a semi-trailer. They create a smooth transition to minimize vibration and are important to reducing dock shock. In addition to helping reduce chronic injuries to workers, including back and neck injuries and muscle fatigue, Rite-Hite dock levelers can even reduce damage to equipment and product.



A leveler serves as a bridge between the loading dock floor and a semi-trailer bed.

Rite-Hite Dock Levelers with Smooth Transition technology can significantly reduce the impact of dock shock when compared to standard levelers. The Smooth Transition design uses a constant-radius rear hinge that reduces the bumps and gaps at the rear of the dock leveler. Two-point crown control on the front lip hinge distributes the load evenly, which smoothes out the transition between the leveler

and trailer bed and extends the hinge life. A recently optimized lip chamfer improves smoothness from the trailer bed onto the leveler by approximately 20 percent.

Rite-Hite offers dock levelers to meet any application and budget, including hydraulic dock levelers, air-powered dock levelers and mechanical dock levelers. Rite-Hite also produces specialized loading dock systems, truck levelers and wheel risers.

LOOKING AHEAD

As the U.S. workforce continues to age, dock shock is something every safety-minded business needs to pay attention to. Managing chronic conditions such as vibration exposure to forklift operators can minimize the impact and cost of injury or disability while enhancing productivity.

If your company is interested in addressing the occurrence of dock shock, experts recommend that you bring in a trained loading dock equipment representative to inspect your loading dock area and help address the severity of dock shock in your facility. It is also important to note that Rite-Hite dock levelers are designed to minimize dock shock and create a smooth transition between the warehouse floor and trailer. This not only reduces injuries and damage to equipment and product, but also shows a company's commitment to worker safety and morale.

To schedule a free loading dock assessment, call Rite-Hite at **888-841-4283**, or visit **www.ritehite.com** to learn more.

RITEHITE
ALWAYS LOOKING AHEAD

¹ Tishman, F., Van Looy, S., & Bruyere, S. The NTAR Leadership Center, (2012). Employer strategies for responding to an aging workforce. Retrieved from website: http://www.dol.gov/odep/pdf/NTAR_Employer_Strategies_Report.pdf

² Moeller, P. (2013, March 18). Employers slowly enrich programs for older workers. U.S. News & World Report, Retrieved from <http://money.usnews.com/money/blogs/the-best-life/2013/03/18/employers-slowly-enrich-programs-for-older-workers>

³ Lavender, Ph.D., S., & Mehta, M.S., J. (2012). Ergonomic evaluation of new dock levelers on the tibial shock experienced by fork truck operators when loading and unloading trailers. Unpublished raw data, Institute for Ergonomics, Ohio State University, Columbus, OH.