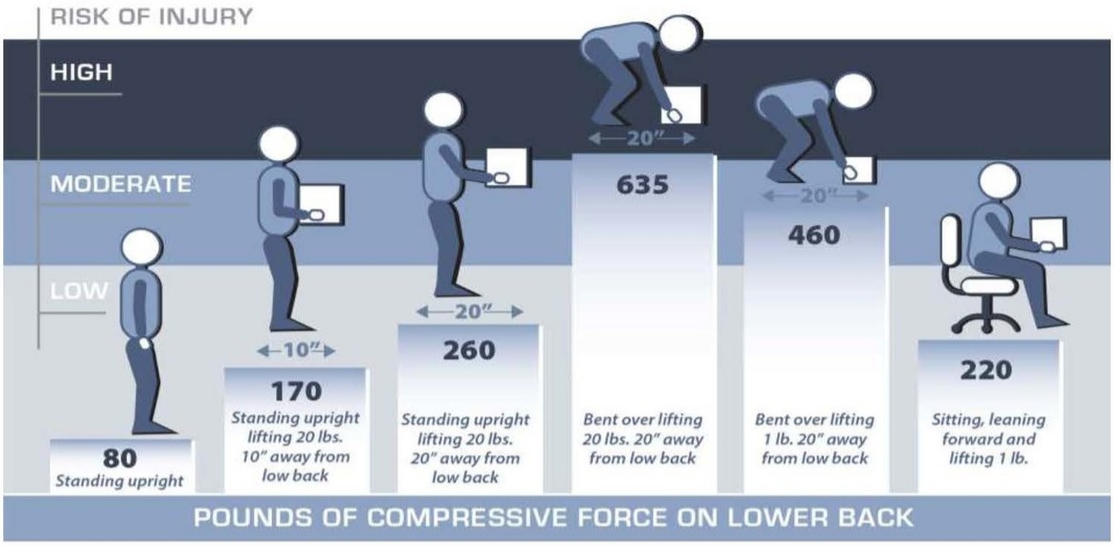
Weekly Safety Tip

Safer Lifting at Work

SAFETY TIPS

SAFER LIFTING at WORK



Warehouse workers often have to carry out physically demanding and repetitive tasks that lead to fatigue and put them at increased risk of injury, especially lower back pain. Most research on the impact of such jobs has focused on the impact of constrained lifting tasks – but a new study has investigated how the body adapts to work-induced fatigue during a multi-planar lifting task.

The findings highlight the importance of considering ergonomics when designing tasks, to reduce the risk of injury. None of the participants had any previous acute or chronic back or shoulder injuries, or neurological or muscular disorders. Their session included maximal voluntary isometric contractions (MVICs) – tests to measure muscle strength – including maximal shoulder flexion, back extension, trunk flexion, trunk twisting and lateral bending bilaterally.

During a manual material handling (MMH) exercise, they were asked to lift, transfer and lower a mass (5kg for women, 7kg for men). The study suggests that as workers become fatigued, they alter their lifting technique to reduce the strain on their body.

The research notes: "The load moment arm decreased across the trial (4% decrease) and participants tended to complete movements faster (4% decrease). "Rectus abdominus [the top layer of the abdominal muscles] activity increased (4% MVIC increase), while anterior deltoid [front of the shoulder] activity decreased over time (20%)." This suggests the body engages core stability to compensate for fatigue in other muscles. A "potentially positive adaptation" noted during the trial was that participants decreased their hand-pelvis distance, which would result in "reduced acute and cumulative compressive forces on the lumbar spine".

Some "potentially negative" adaptations observed included a "decrease in thorax-pelvis flexion deviation phase over time". This indicates participants were repetitively loading the same tissues, increasing their risk of developing musculoskeletal disorders. The researchers concluded that participants "positively adapted to fatigue by decreasing the external moment arm of the load and by adjusting the relative amount of work vs. idle time, effectively resulting in reduced cumulative load to the lumbar spine". They added that the findings could help "to optimise task design, as well as potential implications in injury risk".

The full study, *Adaptations to fatigue during a repetitive multiplanar lifting task*, was carried out by researchers at Brock University and the University of Waterloo, both in Ontario, Canada.

Chartered Institute of Ergonomics & Human Factors

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SAFETY SHARE

Weekly Safety Share

Ditching Daylight Savings Time

Safety Council OF NORTHWEST OHIO alliance

A Health & Well-Being Moment

Why ditching Daylight Saving Time would be a public health win for Americans.

Researchers simulated light exposure patterns across all continental U.S. counties under three time policies: permanent Standard Time, permanent Daylight Saving Time, and biannual switching. They used county data on latitude, longitude, population, and time zones to model solar exposure throughout the year, assuming regular work and sleep schedules. These light patterns were fed into circadian rhythm models to calculate yearly "circadian burden"—the degree to which the body's clock must shift to stay synchronized. The team then compared these estimates to CDC county health data, adjusting for age, socioeconomic status, and other health determinants.

Stanford Models predict fewer strokes and obesity cases under 'Standard Time.'

In A Nutshell

- Stanford models predict fewer obesity and stroke cases under permanent Standard Time.
- Biannual clock changes produce the highest "circadian burden" in nearly all counties.
- Intermediate and late chronotypes benefit most from Standard Time.
- Medical groups already favor Standard Time, but real-world behavior adds uncertainty.

For over a century, Americans have reset their clocks twice a year. A new Stanford University study suggests this routine carries health costs that go beyond a few groggy mornings. According to computer models, adopting permanent Standard Time could *predictably* reduce obesity and stroke cases across the country.

Switching permanently to Standard Time could lower obesity prevalence by 0.78% (about 2.6 million fewer cases nationwide) and reduce strokes by 0.09%, or roughly 307,000 cases. Even permanent Daylight Saving Time would bring benefits, though smaller.

These are not direct counts of patients but projections from mathematical models that connect light exposure, circadian rhythms, and health outcomes, (even modest percentage shifts matter at scale).

How Daylight Saving Time Affects Your Body

Bioengineer Lara Weeda and psychiatrist Jamie M. Zeitzer set out to test a longstanding question:

> Beyond the short-term spikes in heart attacks after "springing forward,"
>
> ***how do different time policies shape long-term health?***

They modeled light exposure for every county in the continental United States under three scenarios: permanent Standard Time, permanent Daylight Saving Time, and the current system of biannual switching. These data fed into established models of human circadian rhythms, the body's internal clock that governs sleep, metabolism, and cardiovascular function.

Geography matters. Counties on the western edge of a time zone face later sunrises and greater circadian strain than those on the eastern edge. Northern counties contend with sharper seasonal swings than southern ones.

Chronotype, or the tendency to be a "***morning person***" or "***night owl***," also shapes outcomes... When comparing Standard Time to Daylight Saving Time, 82% of counties showed lower circadian burden for people with intermediate chronotypes, 61% for evening types, and just 16% for early types.

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