

Health-Saving Tips for Transition to Standard Time

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November 04, 2023

STORY AT-A-GLANCE

- › In the United States, daylight saving time (DST), which began Sunday, March 12, 2023, ends Sunday November 5, 2023. On that day, at 2 a.m. local time, clocks “fall back” one hour to 1 a.m., to what’s known as standard time
- › March 26, 2019, the European parliament voted to end DST as of 2021
- › While the original intention was that extending daylight hours during the summer would result in energy savings, research shows it’s not saving us any money, and is contributing to ill health
- › Researchers have noticed a statistically significant increase in the number of car accidents, workplace injuries and heart attacks in the days after the time changes in the spring, which appear to be related to loss of sleep and circadian rhythm disruptions
- › While the most adverse health effects are attributed to the springtime switch to DST, the switch back to Standard Time in the fall means your body has to get used to it getting dark earlier in the evening. Tips to help your body adjust to the time change are included

Editor’s Note: This article is a reprint. It was originally published October 25, 2019.

In the United States, daylight saving time (DST), which began Sunday, March 12, 2023, ends Sunday November 5, 2023. On that day, at 2 a.m. local time, clocks “fall back” one hour to 1 a.m., to what’s known as standard time.^{1,2}

In Europe, clocks are rolled back an hour on the last Sunday of October, which this year falls on October 29.³ Regardless of the exact day, this time change from DST to standard

time results in the gain of one hour of sleep.

While the loss or gain of one hour might sound like a negligible amount, research clearly shows it has significant ramifications for public health and safety — particularly after the switch to DST in the spring. However, even the switch back to standard time can leave you feeling off-kilter for days or even weeks, as your body adapts to the earlier onset of darkness.

Europe Ditches DST Effective 2021

Many Europeans are now rejoicing, though. March 26, 2019, the European parliament voted to end DST as of 2021,⁴ so certain parts of Europe aren't worrying about clock-changing this year. As reported by The Guardian,⁵ member states are allowed to "choose whether to remain on 'permanent summer' or 'permanent winter' time under the draft directive."

This means that countries opting to remain permanently on "summertime" (the term used for DST in Europe) would perform their last and final clock adjustment on the last Sunday in March 2021. For countries opting to remain in permanent wintertime/standard time, the final adjustment would take place on the last Sunday of October 2021.

While some U.S. states and territories have abolished DST, most have not.⁶ However, the tide is starting to turn even in the U.S. Each year, more states are considering taking action to end it.

As reported by National Geographic,⁷ dozens of state bills have been introduced in 2019, proposing various changes to DST. Oklahoma, Texas, Kansas, California, Oregon and Washington are all considering legislation to opt out of the time change.

Why Do We Have DST?

As explained in the featured video, daylight saving time is intended to give you more access to daylight hours, thereby reducing energy costs and promoting healthy outdoor activities.

But is it worth it? Kazakhstan abolished DST as of 2005,⁸ citing health complications as the reason for its decision.⁹ In 2011, Russia's president Dmitry Medvedev also canceled DST due to the "stress and illness" it causes.¹⁰

While the original intention was that extending daylight hours during the summer would result in energy savings,¹¹ research shows it's not saving us any money. For starters, lighting is no longer the most significant portion of energy consumption, and extending daylight hours encourages greater use of air conditioning and heating, both of which use more energy than lighting. A study¹² by Yale economist Matthew Kotchen and Laura Grant, Ph.D., concluded that:

"... contrary to the policy's intent – DST increases residential electricity demand. Estimates of the overall increase are approximately 1 percent, but we find that the effect is not constant throughout the DST period. DST causes the greatest increase in electricity consumption in the fall, when estimates range between 2 and 4 percent."

Kotchen notes when DST begins in the spring, people are waking during the coldest and darkest part of the day, often turning up the heat to stay warm, and during long evening hours, more air conditioning is used, leading to an overall higher energy use. He told The New York Times,¹³ "The way people use energy now is different from when daylight saving came about."

Similarly, a 2018 meta-analysis¹⁴ of 44 different papers found that, on average, DST lowered electricity use by a mere 0.34%. Locations further from the equator, with mild summers and low cooling demands, may save energy, but geographical locations closer actually use more energy during DST.

DST Increases Traffic Accidents

Aside from failing to provide any significant energy savings, the biannual clock changes also have a detrimental impact on your physical health. Between accidents and health repercussions, it seems clear DST is actually costing more than it's saving.

Researchers have noticed a statistically significant increase in the number of car accidents,¹⁵ workplace injuries¹⁶ and **heart attacks**¹⁷ in the days after the time changes in the spring, which appear to be related to loss of sleep and circadian rhythm disruptions.

According to one 2009 study,^{18,19,20} workplace accidents and injuries increase by 5.7%, and 67.6% more workdays are lost as a result of injuries following the change to DST. Ditto for traffic accidents. A 1996 study^{21,22} found traffic accidents rose by 8% on the Monday following the changeover to DST.

More recent research,²³ published in 2018, found traffic accidents increase 16% on the first day after DST and 12% on the second day. Fatal alcohol-related traffic accidents also increase for the first week after setting the clocks ahead.²⁴

Suicide rates for men also rise in the weeks following DST.²⁵ According to the authors, their finding "suggests that small changes in chronobiological rhythms are potentially destabilizing in vulnerable individuals."

DST Raises Rates of Heart Attacks

Cardiac events are more commonplace every Monday, greater than any other day of the week, and are likely related to changes in sleep associated with the transition from weekend to workday. This is known as the "Monday cardiac phenomenon."²⁶ On the Monday and Tuesday following spring DST, studies^{27,28} show the risk is even more pronounced.

For example, a University of Alabama study²⁹ found the number of heart attacks increased by 10% on the Monday and Tuesday following the time change to DST in the spring, and decreased by 10% on the first Monday and Tuesday after the clocks are switched back in the fall.

Other studies have found even larger discrepancies. For example, data presented at the American College of Cardiology's 63rd Annual Scientific Session in 2014 revealed a 25% increase in heart attacks the Monday after DST in the spring, and a 21% decrease in the fall when an hour of sleep is regained.³⁰ The most recent meta-analysis³¹ looking at this phenomenon was published in the March 2019 issue of the Journal of Clinical Medicine. Here they found:

"A significantly higher risk of AMI [acute myocardial infarction] (Odds Ratio: 1.03 ...) was observed during the two weeks following spring or autumn DST transitions.

However, although AMI risk increased significantly after the spring shift, the incidence of AMI during the week after winter DST transition was comparable with control periods ... Conclusion: The risk of AMI increases modestly but significantly after DST transitions, supporting the proposal of DST shifts discontinuation."

Preliminary research³² presented at the 2018 American Heart Association conference found the number of patients admitted for atrial fibrillation (irregular heartbeat) also rises in the days after DST in the spring, from 2.56 admissions per day to 3.13 admissions.

Other Problems Attributed to DST

Researchers have also found people are less productive once DST is implemented. A 2012 National Geographic article³³ quoted Till Roenneberg, a Russian chronobiologist, who said most people show "drastically decreased productivity," decreased quality of life, increased illness, and are "just plain tired" in the week after DST in the spring.

Disruptions in your sleep pattern tend to cascade throughout your entire body. For instance, sleep helps reset your neural circuits that are impaired during sleep deprivation. With too little sleep, your cognitive flexibility suffers.

Research³⁴ from the University of Washington found cognitive inflexibility even affects judges who are handing down sentences. On the Monday after DST in the spring, longer sentences are imposed on people who have been found guilty.

A similar negative effect has been found in students. A 2015 study³⁵ found DST adversely affected sleep patterns of high school students and their ability to be vigilant at school.

Other data suggest it may affect academic performance. Researchers compared 10 years of SAT scores from Indiana where only 15 of the state's 92 counties moved their clocks forward during the study period. The data indicated SAT scores were 16% of a standard deviation lower in counties that adopted DST.^{36,37}

On a side note, one reason Indiana is used as a discussion model for DST is because it lies smack-dab between Central and Eastern time zones. Geographically, it's actually in the Central zone, but in 2006 it adopted the standardized DST to align with Eastern standard time changes.

The decision has been controversial in Indiana, where the western part of the state wants to align with the Central zone, while the eastern part favors aligning with Ohio's Eastern zone.^{38,39}

A 2019 article⁴⁰ by Health.com also cites evidence linking DST to higher rates of depression diagnoses, cluster headaches and lower success rates among women undergoing in vitro fertilization.

The Importance of Maintaining Your Circadian Rhythm

Many of the problems attributed to the biannual time change has to do with the fact that gaining or losing an hour of time throws off your circadian clock. As noted in a November 2018 NPR report,⁴¹ your internal clocks aren't easily reprogrammed, as they're all synchronized to the 24-hour cycle of light and dark.

According to Fred Turek, director of the Center for Sleep & Circadian Biology at Northwestern University, who is featured in the NPR article, it takes a day or two for your body to adjust to the new time. As noted by NPR:⁴²

“Over the last 20 years, scientists have documented that, in addition to the master clock in our brains, every cell in our body has a time-keeping mechanism. These clocks help regulate important functions such as sleep and metabolism.

And increasingly, there's evidence that when our habits – such as when we eat and sleep – are out of sync with our internal clocks, it can harm us. As we've reported, our bodies crave consistent routines. When we disrupt our routines ... it can increase the risk of metabolic disease.”

That changing our clocks backward and forward affects our routines and biological clocks is clear. The question is, would it be better to remain in perpetual DST or in perpetual standard time? Or does it not make a difference?

This somewhat sticky issue is addressed in a 2019 paper⁴³ in one of my absolute favorite journals, *Frontiers in Physiology*. This is one of the best reviews you will ever read about daylight saving time and it's free to read or download in its entirety.

The review addresses “numerous fallacies ... propagated by lay people, politicians and scientists,” and offers “suggestions of how problems associated with DST ... can be solved based on circadian biology.”

It's a very comprehensive paper, and I recommend reading through it if you want a more in-depth understanding of how keeping one time or the other influences biology. Here's an excerpt illustrating some of the issues at hand:

“In September 2018, two sleep researchers from the University of Salzburg claimed in an interview that there is no hard scientific evidence against perennial DST and that the risks would be negligible.

This press release contained several statements that echo wide-spread incorrect beliefs and is therefore an excellent substrate for clarifying fallacies ...

The press release adds that '... many people extensively use smart phones or laptops shortly before they go to bed. The strong blue components ... are the true robbers of sleep. ... the potential effects of summer time can be neglected in comparison.'

Indeed, several studies have shown that the usage of artificial light in the evening, and specifically that of electronic screens, does 'rob' sleep and delays the circadian clock. The second half of the statement, however, is missing the point: the combination of nighttime light exposure and DST is far worse than nighttime light exposure alone.

The nighttime light exposures delay the body clock in relation to the sun clock, which translates to living further west is a time zone, while DST advances the social clock in relation to the sun clock, which translates into moving the time zone further east.

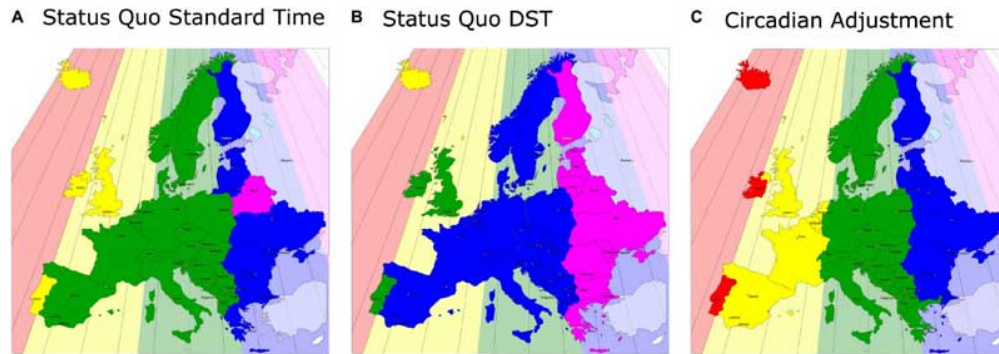
Thus, in DST, the two effects additively (i.e., both delaying the body clock and advancing the social clock in relation to the sun clock) increase SJL [social jetlag, i.e., misalignment of biological and social time, such as discrepancy between work and free time⁴⁴] since both effects increase the difference between the mid-sleep on work-free days (closer to the individual circadian midpoint of sleep) and mid-sleep on workdays ...

In summary, the scientific literature strongly argues against the switching between DST and Standard Time and even more so against adopting DST permanently.

The latter would exaggerate all the effects described above beyond the simple extension of DST from approximately 8 months/year to 12 months/year (depending on country) since body clocks are generally even later during winter

than during the long photoperiods of summer (with DST). Perennial DST increases SJJ prevalence even more, as described above.

A solution to the problem is shown in Figure 2C, which contains a combination of obliterating DST (in favor of permanent Standard Time) and reassigning countries and regions to their actual sun-clock based time zones. Under such adjustment, social (local) clock time will match sun clock time and therefore body clock time most closely.”



Tips to Protect Your Health During Time Switches

In addition to the strong recommendation of getting eight hours of sleep on a consistent basis, there are some other things you can do to mitigate the effects of the time change until the powers that be decide to eliminate it.

While the most adverse health effects are attributed to the springtime switch to DST, the switch back to standard time in the fall means your body has to get used to it getting dark earlier in the evening. When “falling back” an hour, the following tips can be helpful:⁴⁵

- Gradually start going to bed earlier, say 30 minutes earlier than usual Saturday, and another 30 minutes earlier Sunday. This will help you get up earlier to maximize your exposure to daylight earlier in the morning rather than later in the evening.

Be particularly mindful of using electronic devices in the days prior to the switch-over. Research⁴⁶ on teens shows that using electronics for four hours during the day can increase your risk of needing more than an hour to fall asleep by 49%.

So, if you've ever considered "unplugging" for a day or two, the weekend of the time change is a perfect time to turn everything off, or cut down your use of electronics to a bare minimum so that you can optimize your sleep. You can also consider supplementing with melatonin if you have trouble falling asleep on an earlier schedule.

- Exercise in the mornings over the weekend, in accordance with your overall level of health and fitness.
- Eat dinner earlier and pay attention to your diet, making sure you are consuming plenty of fresh, whole foods, preferably organic, and minimal amounts of processed foods and fast foods; keep your sugar consumption low, especially fructose. I invite you to review our optimized [nutrition plan](#) here.
- Practice good sleep hygiene, including sleeping in complete darkness, checking your bedroom for electromagnetic fields, and keeping your bedroom temperature cool enough for optimal sleep. For a full report about how to maximize the quality of your sleep, see "[Sleep – Why You Need It and 50 Ways to Improve It.](#)"

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