

# Aviation Human Factors Industry News

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From the sands of Kitty Hawk, the tradition lives on.

Hello all,

To subscribe send an email to: [rhughes@humanfactorsedu.com](mailto:rhughes@humanfactorsedu.com)

In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

★This is a great video for recreational drone users education

★Breaking Patterns is Key to Preventing Pilot Human Error

★ Human Factors Training Announcement

★AC Is Not Good Substitute for Maintenance Fatigue Rule

★NTSB: Pilot Error Caused 2014 Phenom Crash

★South Florida Mechanic Pleads Guilty to Fraud

★Aviation industry needs time to upgrade black box tech

★Relative of Germanwings crash victims to sue doctor of suicidal co-pilot Andreas Lubitz

★Mechanical issue brings down Aventura

★And Much More

**This is a great video for recreational drone users education:**



<https://www.youtube.com/watch?v=Ay7iKzN5Pxs>

## **Breaking Patterns is Key to Preventing Pilot Human Error**

In business aviation, pilots have to be smart, so how could two trained instructors flying together run out of gas mid-flight? Pat Daily, from Convergent Performance, attributes it to a person's "error fingerprint," something he says "we all have." Daily will address this issue as well as the 40 common causes of [human error and counter measures](#) to combat them at an NBAA Professional Development Program course, Sept. 12 and 13 in Washington, DC...

[Listen to Podcast](#)

## Human Factors Training Announcement

If you need human factors training, we have just scheduled the following courses at our location in Myrtle Beach, SC, USA.

1. Human Factors Train-The-Trainer for Aircraft Maintenance (5-days)
2. Human Factors Initial for Aircraft Maintenance (2-days)
3. Human Factors Recurrent for Aircraft Maintenance (1-day)

For additional information please visit <http://www.tacgworldwide.com/HFMyrtleBeach.htm>

These are the only courses we will be offering at our location this year and they do fill quickly!

Hope to see you at the Beach this November!

Regards,

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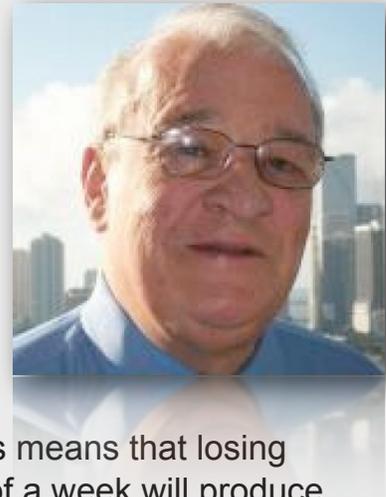
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# AC Is Not Good Substitute for Maintenance Fatigue Rule

by [John Goglia](#)

For those of us who have been frustrated by the FAA's inability to issue a [comprehensive duty and rest rule](#) for mechanics, it was disappointing to see the agency's latest attempt at tackling the issue. Even as the FAA specifically recognizes in this latest draft Advisory Circular the significant fatigue issues that face maintenance workers: "Of concern to [the FAA] is the finding that maintenance personnel tend to get [three hours less sleep per night](#) than is recommended. That is a sleep debt twice the national average. Sleepiness and fatigue associated with sleep debt is cumulative. This means that losing even an hour of sleep every other night over the course of a week will produce conditions that [negatively affect performance](#)."



Instead of proposing clear maximum duty times and minimum rest requirements, the FAA has instead proposed a draft advisory circular to manage mechanic fatigue risk. Since an AC is not regulatory and therefore not mandatory, its chances of being complied with are [limited by the usual factors](#): time and money. So, no doubt, the best carriers will take this AC to heart and integrate its proposals into their safety management systems. But the rest—of which there are many—will not. And there won't be anything the FAA can do, of course, because no one needs to comply with an advisory circular. The FAA makes that abundantly clear in the draft itself: "[NotMandatory](#). This AC is informational and is not mandatory. It does not constitute a regulation."

## **AMBIGUOUS REGULATION**

Currently, the only duty-time rule that applies to mechanics is [FAR 121.377](#), which states, "Within the United States, each certificate holder (or person performing maintenance or preventive maintenance functions for it)

shall relieve each person performing maintenance or preventive maintenance from duty for a period of at least 24 consecutive hours during any seven consecutive days, or the equivalent thereof within any one calendar month.”

At first blush it might seem that mechanics under this rule—which applies only to Part 121 air carriers and their maintenance contractors, not air-taxi or corporate or GA mechanics—would get a full 24 hours off every week. But when the FAA tried to interpret it this way in 2010 (in response to a letter from Pratt & Whitney in 2008—yes, interpretations do take their sweet time getting out of the FAA’s legal office) the FAA was met with a hail of opposition from airlines, repair stations and even mechanics’ unions. The issue boiled down to the meaning of the phrase “[or the equivalent thereof within any one calendar month.](#)” Did that mean that mechanics could work more than a week straight without a 24-hour break?

In its 2010 interpretation, the FAA took the position that the phrase “or the equivalent thereof within any one calendar month” had its limits: “The equivalent standard, however, does have limits. The tenants [sic] of statutory and regulatory interpretation suggest that the specific standard of one day off every week cannot be rendered completely inoperative by the more general equivalent standard. A previous interpretation allowed that a work schedule that provides for personnel to have a group of four days off followed by up to 24 days of work, or vice versa, would still meet the standard of being ‘equivalent’ to one day off in every seven within a month... That interpretation, however, was issued prior to the findings relating fatigue to maintenance related errors in the air carrier industry... Today, we would not view as compliant a schedule that provides over the course of eight weeks for four days off followed by 48 straight days of duty followed by four more days off. Such a work schedule that generally provides [for an average of one day off over several weeks](#) cannot be said to be ‘equivalent’ to the more specific standard requiring one day off out of every seven days.”

The FAA’s opinion here shows that taken to its logical extreme, the “equivalent” standard could allow weeks straight of work without any day off, as long as the required days off were strung together at the end. You don’t have to be a [sleep expert](#) to know that working weeks straight without a break is not the same as a day off every week.

Well, in the firestorm that followed, the FAA backtracked on this interpretation. It did go to the trouble of requesting public comments in 2011. I do agree on at least one concern that was raised by opponents: the interpretation would drive even more maintenance work out of the country. And that's because the rule applies only "within the United States." Clearly, workers performing maintenance for U.S. airlines should be covered by the same duty and rest rules, regardless of where the work is performed. **After all**, it's the safety of the aircraft after maintenance that the FAA is concerned with, not the health of maintenance workers generally. U.S. employers should not be put at a competitive disadvantage by safety rules such as this one that apply only within the U.S.

But back to the subject of an AC instead of a maintenance fatigue rule. Advisory guidelines just won't work when and where you need them most: when mechanics **are being pressured to work fatigued** at places that put a premium on pushing airplanes out on schedule more than getting them out maintained correctly. These places tend to be the ones that have the fewest worker protections (yes, that usually means places without unions). So, while the AC has a lot of excellent information and advice that employers should use regardless of where the maintenance work is being performed, it is not a substitute for an actual rule with maximum hours of work and minimum rest.

I understand that getting a rule through will be tough. And it will likely require Congressional direction to push it through. But as our knowledge of the effect of fatigue on human performance grows, it's not possible to deny that long hours, day after day, without catch-up rest degrade a maintenance performer's abilities to perform maintenance tasks properly, **especially the most safety critical and complex tasks**. While improperly performed maintenance could result in a crash in the worst case, improper maintenance also results in costly incidents. So, if the FAA doesn't come up with a rule, employers should create their own workplace standards, especially since fatigue can drive up worker injuries and Workers Comp claims.

[https://www.faa.gov/aircraft/draft\\_docs/media/AFS/AC\\_120-MFRM\\_Coord\\_Copy.pdf](https://www.faa.gov/aircraft/draft_docs/media/AFS/AC_120-MFRM_Coord_Copy.pdf)

## NTSB: Pilot Error Caused 2014 Phenom Crash

The pilot of an Embraer Phenom failed to turn on crucial de-icing equipment during an approach to the airport in Gaithersburg, Maryland, on December 8, 2014, causing a deadly crash, the NTSB said in its probable-cause hearing recently. All three people on the jet and three on the ground were killed.

**“Pilots must rely on checklists and procedures because relying only on memory can have deadly results,”** said NTSB

Chairman Christopher Hart. “The pilot’s failure to turn on the de-icing system in an icing situation proved to be disastrous.” By not taking possible icing into consideration, the pilot set approach and landing speeds that were too slow for conditions, leading to an aerodynamic stall at an altitude at which a recovery was not possible, the board said. The airplane crashed less than a mile from the runway. The board recommended to the FAA and GAMA that they develop a system that would automatically alert pilots when ice-protection systems should be turned on in certain airplanes. **“Because pilots are human and therefore fallible,”** said Hart, “this crash is a reminder that automated alerts to pilots can, and do, save lives.” The NTSB also recommended to NBAA that it develop enhanced pilot-training guidelines for flying in winter weather conditions, including the use of ice protection and adherence to checklists. Hart also noted that Embraer had installed a cockpit voice and data recorder on the jet, although it was not required to do so, and that data “enabled a richer understanding of what occurred.” A report from the NTSB board meeting is posted online; the board's final report on the accident will be posted in a few weeks.



<http://www.avweb.com/avwebflash/news/NTSB-Describes-Flight-Excursions-In-Phenom-Crash-223224-1.html>

[http://www.nts.gov/news/events/Pages/2016\\_gaithersburg\\_BMG.aspx](http://www.nts.gov/news/events/Pages/2016_gaithersburg_BMG.aspx)

## South Florida Mechanic Pleads Guilty to Fraud

Hilario Hernandez, owner and chief inspector of Max Avionics, an FAA-authorized aircraft repair station in Miami, has pleaded guilty in the U.S. District Court in Miami for [fraudulently certifying](#) that aircraft parts were approved for return to service. According to the indictment, Max Avionics and Hernandez accepted aircraft parts from various customers to conduct repairs and return them to service. However, a number of those aircraft parts were not on the company's [FAA-approved capability list](#) authorizing it to perform those repairs. Despite not having this authorization, Hernandez completed the maintenance release forms, fraudulently certifying that those repaired parts were ready to be installed on an aircraft.



Prosecutors also allege that Hernandez made false statements to FAA inspectors in furtherance of these violations. In an interview Hernandez neither denied nor confirmed guilt but referred to a letter he sent to the FAA explaining he entered into the plea agreement to ensure that his company would not be shut down.

## Aviation industry needs time to upgrade black box tech

Aircraft black boxes, which hold key information in better understanding the final moments before fatal plane crashes, have again been at the center of media attention after the Egypt Air Flight MS804 crashed into the deepest parts of the Mediterranean Sea in May 2016. However, a leading expert says that hurried technology upgrades would jeopardize safety.

Black box recorders. They can withstand acceleration forces of up to 3,400Gs; endure temperatures of 1,100 °C; the data stored in them can survive for extensive periods of time even in extreme environments.

However, there is one problem with them – once they sink into deep water, the quest to find them is akin to the proverbial search for

a needle in a haystack. Once again, rescue teams have been virtually racing against time to detect the devices' signal before the locators' batteries run out of power in a month's time. The situation has been reminiscent of the still unsuccessful hunt for Malaysia Airlines Flight 370, lost in March 2014, the costly search for Air France 447, which crashed in June 2009, as well as the December 2014 disaster of Air Asia Flight 8501.



Speaking exclusively to *E&T*, David Barry, Aviation Safety lecturer at Cranfield University, said, “The underwater locator beacon is only designed to last 30 days. The range of these devices is limited to three to five thousand meters, so in very deep water we have to tow a hydrophone very deep, which isn't trivial. That can be a major task requiring specialist equipment and the signal can get refracted and bounce around at different temperature layers within the water, so it can take a very long time to find these devices.”

Since the 2009 loss of AF447, experts have been calling for changes to black box technology. It took two years of extreme effort and expenditure to locate the wreckage of the ill-fated Airbus and retrieve the Flight Data and Cockpit Voice Recorder, [without which it was impossible to understand what exactly caused the tragic disaster.](#)

“There is a new requirement for the new underwater locator beacon on flight data recorders to last [90 days](#). And that is coming to an effect from the start of January 2018,” Barry said.

“There is also another requirement for aircraft to carry another underwater locator beacon that would transmit a [different frequency](#), which would be more easily identified by military equipment, rather than needing to have specialized equipment on scene. This means the signal could be picked up much more quickly. This requirement will be valid from January 2019.”

However, many have asked why such changes will only start taking effect almost ten years after the problems were first pointed out, in which time there have been three further major incidents of lost aircraft.

“The aviation industry is very, very conservative,” Barry explained. “And it has to be. The technology would be very easy to fit, but you have to think whether it presents risks, whether it affects avionics on the aircraft. You also can’t ground all the planes around the world at once to have new technology installed overnight. Such as with the new beacons, it requires some downtime to have them installed as you have to take the flight data recorders off the aircraft and refit them with the new beacons.”

Aircraft manufacturer Airbus wants to go much further and plans to start fitting some of its planes with the so-called [deployable flight data and cockpit voice recorders](#). Such devices would be designed to float on water and would be ejected from the plane in case of severe distress.

“If we have a deployable recorder it will be much easier to find,” Charles Champion, Airbus executive vice-president for engineering, told journalists this month. We have been working on that and this [the Egypt Air disaster] only reinforces our overall approach.”

However, Barry, who has been part of a team at Cranfield developing an algorithm to detect severe distress, says the idea has many drawbacks.

“There is this problem with false positives,” he said. “Imagine an aircraft approaching Heathrow and some software bug suddenly triggers and the recorder is shot out from the side of the aircraft over some house. That could be introducing serious risk. This kind of technology implementing isn’t trivial. We really don’t want emergency distress signals to be sent out willy-nilly.”

The algorithm could also initiate transmission of basic flight recorder data such as location, altitude or air-speed between the moment when the problems are detected and the actual impact.

“It will allow investigators to get a basic set of data very quickly and then also help them to find the main recorders and the wreckage much faster than today,” Barry explained.

[Continuous streaming of flight recorder data throughout the flight is the ultimate goal](#), Barry said. However, with the amount of information collected by the recorders, it’s still quite far ahead.

“A typical modern flight data recorder will have **2,000 parameters**, recording data up to eight times per second. That’s a huge amount of data about what’s happening in the aircraft and what the aircraft systems are doing,” said Barry.

“I think it would be a while before that amount of data is feasible to transmit via satellite communication links. Imagine every aircraft that is flying in the world transmitting that amount of data routinely. It will come eventually. In the shorter term, trigger transmission will be the way forward.”

## **Relative of Germanwings crash victims to sue doctor of suicidal co-pilot Andreas Lubitz**

A man whose daughter and grandson were killed in the March 2015 Germanwings crash is suing the doctor of suicidal co-pilot Andreas Lubitz, who deliberately crashed the plane into the Alps.



The 61-year-old man is suing the medic for failing to report Lubitz's mental health problems, and has also filed a complaint against the medical experts in the budget carrier's parent company, Lufthansa. On 24 March, 2015, Lubitz deliberately crashed the Airbus A320-211 into the French Alps about 62 miles north-west of Nice. **He had previously been diagnosed with suicidal tendencies and declared unfit for work.**

Lubitz locked the captain out of the cockpit before beginning the fatal descent. In the wake of the crash, the European Aviation Safety Agency issued new guidelines calling for at least two crew members to be in the cockpit at all times.

French prosecutor Brice Robin said that doctors had informed Lubitz that he was not fit to work but under medical confidentiality rules Germanwings had no access to this information.

The plaintiff blames Lubitz's doctor for failing to alert the airline or aviation authorities about the pilot's mental health problems.

"Confidentiality no longer applies, because she knew her patient was a pilot with mental issues that were repeatedly expressed," the man told the German newspaper Die Welt.

Lubitz had visited 41 doctors in the months leading up to the crash, and in 2009 informed his employers of a severe depressive episode that had forced him to put his training on hold.

He was allowed to resume employment after being declared fit by doctors. The plaintiff alleges that given Lubitz's history of mental health problems, he should not have been allowed to fly.

In May, the German doctor's association strongly criticized Lufthansa and the Federal Aviation Authority for failing to regularly check Lubitz's mental health condition. It came after the relatives of 80 victims of the crash sued the US aviation school where Lubitz underwent training for allegedly failing to screen him for mental health problems.

## **Mechanical issue brings down Aventura**

The Aventura 2 pilot was conducting touch-and-go landings on a river in Rockledge, Florida.

About 300 feet above ground level, the engine began to misfire and subsequently failed. He did not have sufficient altitude to switch fuel pumps and attempt an engine restart, so he chose to conduct a forced landing.



During the landing flare, the airplane lost lift, landed hard on the water, and nosed over, resulting in two minor injuries.

An examination of the engine found that [a ground wire lug on the No. 1 fuel pump was loose](#), which caused the ground wire to have intermittent contact with the lead and likely caused the fuel pump to malfunction and the engine to subsequently lose power.

The most recent conditional inspection was completed about 10 months before the accident.

The pilot, who was a certificated experimental aircraft repairman and conducted maintenance on the airplane, stated that he [“must have missed this item on his last inspection.”](#)

The NTSB determined the probable cause as the pilot’s failure to maintain airspeed during a forced landing following a loss of engine power, which resulted in a hard landing. Contributing to the accident was the pilot’s [inadequate inspection of the engine](#), which resulted in a loose ground wire lug on a fuel pump and the subsequent loss of engine power.

NTSB Identification: [ERA14LA309](#)

This June 2014 accident report is provided by the [National Transportation Safety Board](#). Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

## **[FAA Issues Final Policy on the Use of Airport Hangars](#)**

The FAA’s final policy on the [non-aeronautical use](#) of airport hangars appears in today’s Federal Register and will take effect on July 1, 2017. The FAA is issuing the policy to clarify how aviation facilities – including hangars can be used on airports that receive federal funds.

The final policy strikes a balance between hangar use for aviation and non-aviation purposes.

The policy ensures hangars are available when there is an aviation need, and if demand is low, allows hangars to be used for non-aviation activities. The FAA recognizes that non-aviation hangar space rental allows airport sponsors to be economically independent when hangars are not being used to fulfill aviation needs. [Airport sponsors must receive approval from the FAA before hangars can be used for non-aviation purposes.](#)

In addition, the policy outlines the type of aircraft that can be built in a hangar, the equipment and items that can be stored in hangars, and the role of the airport sponsors to ensure tenants pay fair market value for hangar space.



## **FAA: Auto Detailers Not Suited To Clean Aircraft**

While the FAA considers the physical act of washing an aircraft, by itself, as neither maintenance nor preventive maintenance, the agency is [warning aircraft operators](#) about using auto detailing companies to perform this task, since they cannot ensure compliance with maintenance-related procedures that are part of the washing process. According to the FAA, manufacturer recommendations and corrosion prevention and control programs usually include sequential steps that are considered maintenance or preventive maintenance. These include [aircraft preparation tasks](#), such as covering static ports; post-wash procedures and maintenance checks/inspections; lubrication and other preservation tasks; replacement of defective environmental gaskets and sealant materials; and documentation.



Thus, the agency is recommending that “appropriately authorized” or certified personnel perform or supervise the work and that operators follow return-to-service procedures for the aircraft. Information and recommended procedures can be found in manufacturers’ published manuals and in Advisory Circular 43-4, “Corrosion Control for Aircraft,” the FAA noted.

[http://www.faa.gov/other\\_visit/aviation\\_industry/airline\\_operators/airline\\_safety/info/all\\_infos/media/2016/InFO16005.pdf](http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2016/InFO16005.pdf)

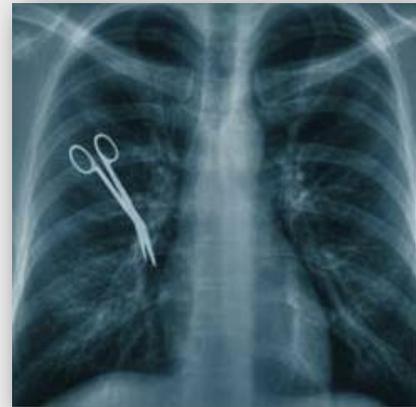
[http://www.faa.gov/documentLibrary/media/Advisory\\_Circular/AC\\_43-4a\\_.pdf](http://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_43-4a_.pdf)

## **Deadly Medical Mistakes**

Medical errors in hospitals and other health-care facilities are now the **third leading cause of death** in the United States, claiming more lives each year than respiratory disease, accidents, strokes, and Alzheimer’s disease.

After analyzing four large studies investigating death rate, researchers at Johns Hopkins University calculated that mistakes ranging from undetected complications to medication mix-ups are responsible for more than **250,000 deaths a year**. “It boils down to people dying from the care that they receive rather than the disease for which they are seeking care,” study leader Martin Makary tells *The Washington Post*.

The researchers argue that federal mandates should be revised to require doctors to **disclose medical errors** that resulted in a preventable death. “When a plane crashes, we don’t say this is confidential proprietary information,” Makary says. “We consider this part of public safety. Hospitals should be held to the same standards.”



## Wal-Mart is replacing employees with drones

Walmart's latest employees will look a lot like drones.

That's because they are, as the company's Vice President of Last Mile and Emerging Sciences revealed, just before its annual shareholders meeting.



The drones will [displace inventory quality assurance workers](#), in an effort to slash the time for inventory checks at Walmart's massive distribution centers from one month to one day. As for the inventory checkers replaced by the drones, Walmart says they'll be [given new opportunities with the company](#).

Walmart is working with the Federal Aviation Administration and NASA to develop the drone technology, which can take as many as 30 images a second from a mounted camera.

The camera then scans for tracking number matches, while an employee monitors its progress.

Walmart says the technology will be implemented in all of its distribution centers, but it's still six to nine months away, and there isn't a specific launch plan.

## Shift Work Linked to More Severe Strokes

Shift workers, who punch in for [graveyard or rotating shifts](#), are more prone to numerous health hazards, from heart attacks to obesity, and now, new research shows shift work may also have serious implications for the brain.

“The body is synchronized to night and day by circadian rhythms—24-hour cycles controlled by internal biological clocks that tell our bodies when to sleep, when to eat and when to perform numerous physiological processes,” says David Earnest, PhD, professor in the Department of Neuroscience and Experimental Therapeutics at the Texas A&M Health Science Center College of Medicine, in a release. “A person on a shift work schedule, especially on rotating shifts, **challenges, or confuses**, their internal body clocks by having irregular sleep-wake patterns or meal times.” According to Earnest, it’s not the longer hours—or the weird hours—necessarily that is the problem. Instead, **it is the change in the timing of waking, sleeping, and eating every few days that “unwinds” shift workers’ body clocks and makes it difficult for them to maintain their natural, 24-hour cycle.** When body clocks are disrupted, as they are when people go to bed and get up at radically different times every few days, there can be a major impact on health. Earnest and his colleagues have found that shift work can lead to more severe ischemic strokes, the **leading cause of disability in the United States**, which occur when blood flow is cut off to part of the brain. Earnest and his colleagues study is published in *Endocrinology*.

Using an animal model, Earnest and his team, including colleague Farida Sohrabji, PhD, also a professor in the Department of Neuroscience and Experimental Therapeutics and director of the Women’s Health in Neuroscience Program, found that subjects on shift work schedules had more severe stroke outcomes, in terms of both brain damage and loss of sensation and limb movement than controls on regular 24-hour cycles of day and night.

Of interest, their study—supported by the American Heart Association—found that males and females show major differences in the degree to which the stroke was exacerbated by circadian rhythm disruption; **in males**, the gravity of stroke outcomes in response to shift work schedules was much worse than **in females**.



**Act**

- F** **Face**  
Look in the mirror to see if your smile is uneven
- A** **Arms**  
Try to raise your arms
- S** **Speech**  
Are your words slurred or are you unable to repeat a phrase?
- T** **Time**  
Time is critical. Get to the hospital immediately

Call 911 and go to the Valley's only certified primary stroke center, Community Regional Medical Center.

“These sex differences might be related to reproductive hormones. Young women are less likely to suffer strokes, as compared with men of a similar age, and when they do, the stroke outcomes are likely to be less severe. In females, estrogen is thought to be responsible for this greater degree of neuroprotection,” Sohrabji says. “Essentially, estrogen helps shield the brain in response to stroke.” However, older women approaching menopause show increasing incidence of ischemic stroke and poor prognosis for recovery, compared with men at the same age.

Some of Earnest’s previous work has shown that a [high-fat diet](#) can also alter the timing of internal body clocks, as well as dramatically increase inflammatory responses that can be a problem in cardio- and cerebrovascular disease (conditions caused by problems that affect the blood supply to the brain—which includes stroke).

“Next we would like to explore whether inflammation is a key link between circadian rhythm disruption and increased stroke severity,” Earnest says. “With this information, we may be able to identify therapeutic interventions that limit damage after a stroke in patients with a history of shift work.”

“This research has clear implications for shift workers with odd schedules, but probably extends to many of us who keep schedules that differ greatly from day-to-day, especially from weekdays to weekends,” Earnest adds. “These irregular schedules can produce what is known as ‘[social jet lag](#),’ which similarly unwinds our body clocks so they no longer keep accurate time, and thus can lead to the same effects on human health as shift work.”

An immediate impact of these studies on human health is that individuals in shift work-type professions [should be monitored more closely](#) and more frequently for cardio- and cerebrovascular disease and risk factors such as hypertension and obesity.

In the meantime, Earnest suggests that those with irregular sleeping patterns should at least try to maintain [regular mealtimes](#), in addition to avoiding the usual cardiovascular risk factors like a high-fat diet, inactivity, and tobacco use.

<http://press.endocrine.org/doi/10.1210/en.2016-1130>

## Seven Ways to Increase Your Consistency

- 1. Make a commitment.** After you identify the activities you need to do to accomplish your goals, make a commitment to do them consistently—without fail or excuse. Make that decision as to when and what you will do in advance, rather than waiting until the time you plan to do it.
- 2. Set up routines.** Establish a routine to do your daily activities. For example, if you are going to exercise every morning, set up a routine. Allocate the amount of time you will need to do each activity up to and including your exercise period—such as getting out of bed, dressing, morning chores, and travel time.
- 3. Don't allow excuses.** Resolve right now that you will not permit yourself to make excuses.
- 4. Take advantage of your peak energy state.** When is your energy level at its highest? Whenever possible, use these times to devote to the activities you need to be consistent about. It's much easier to do what you know you should do when you have energy than when you are exhausted!
- 5. Do the challenging tasks first.** I have found it is always best to do the most important activities first. If the tasks that will drive your results and help you achieve your goal are hard, do them first. It's too easy to put off the things we don't enjoy.
- 6. Review your goals often.** After writing down your goals, consider writing a commitment letter to remind yourself why your goal is important and to list the reasons you want to achieve it. Review the letter anytime you find yourself procrastinating or rationalizing that something else is more important.

**7. Commit to 21 days in a row.** It takes 21 consecutive days to make something a habit. Consistency will be easier once it becomes a habit for you. Will you do what is required of you for 21 straight days?

### **How to Win the Race**

- Look at your goals and decide what you need to do with consistency to achieve them.
- Determine which of the seven suggestions above apply to your situation.
- Put together a daily action plan.
- Set a consistency goal that you can maintain over an extended period of time.
- Be realistic. Biting off more than you can chew will only result in frustration.

**You are in control of your life and how you spend your time. You can achieve any goal you set if you will be consistent in doing the correct activities correctly.**

## **TED: Ideas Worth Spreading**

Extreme runner Ray Zahab shares an enthusiastic account of his record-breaking trek on foot to the South Pole — a 33-day sprint through the snow.



[https://www.ted.com/talks/ray\\_zahab\\_treks\\_to\\_the\\_south\\_pole](https://www.ted.com/talks/ray_zahab_treks_to_the_south_pole)