# Aviation Human Factors Industry News

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**Hello all,**

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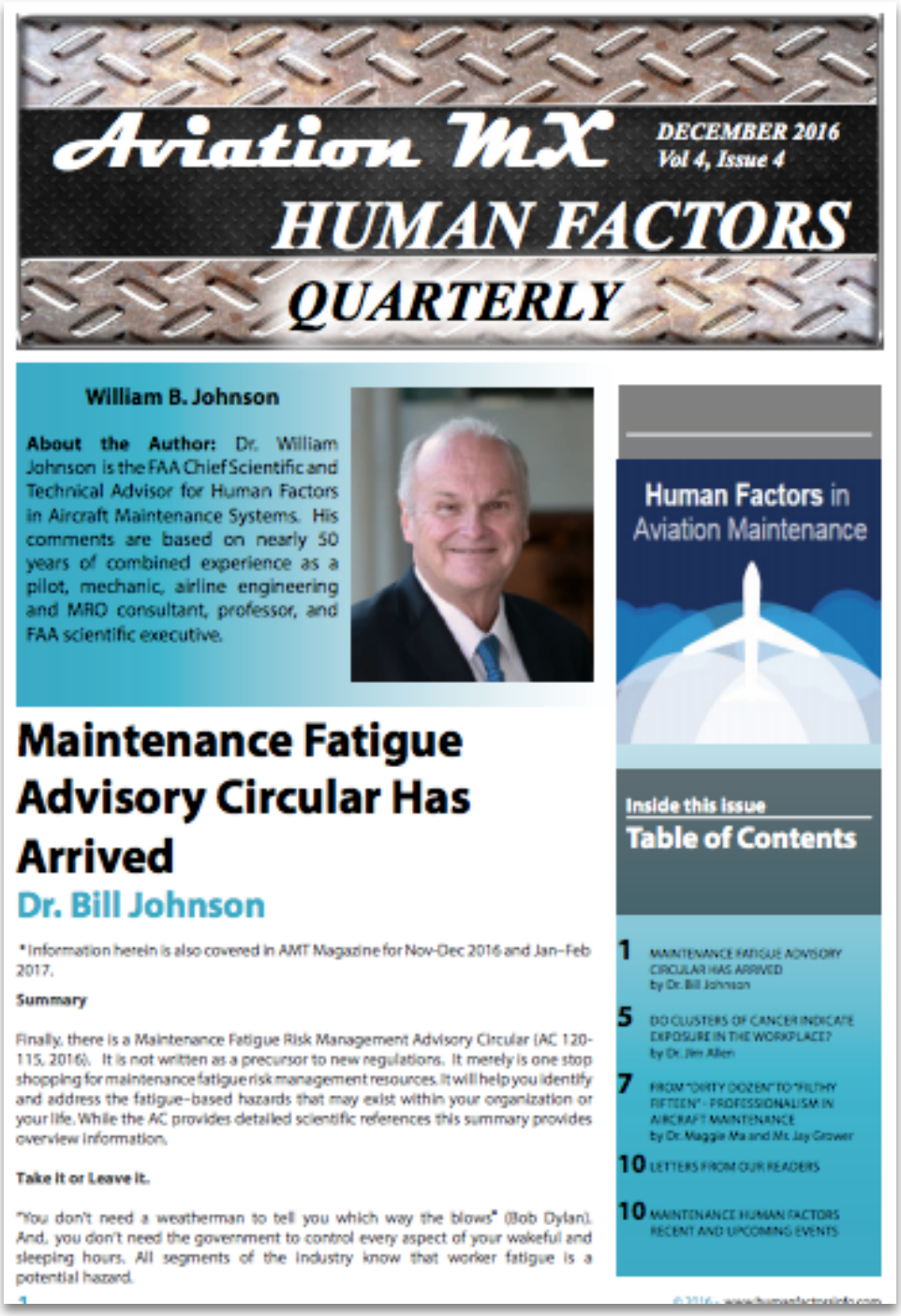
**In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:**

# FAA's Aviation MX Human Factors Quarterly



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HUMAN FACTORS
QUARTERLY

William B. Johnson

**About the Author:** Dr. William Johnson is the FAA Chief Scientific and Technical Advisor for Human Factors in Aircraft Maintenance Systems. His comments are based on nearly 50 years of combined experience as a pilot, mechanic, airline engineering and MRO consultant, professor, and FAA scientific executive.

Human Factors in Aviation Maintenance

Maintenance Fatigue Advisory Circular Has Arrived

Dr. Bill Johnson

*Information herein is also covered in AMT Magazine for Nov-Dec 2016 and Jan-Feb 2017.

**Summary**

Finally, there is a Maintenance Fatigue Risk Management Advisory Circular (AC 120-115, 2016). It is not written as a precursor to new regulations. It merely is one stop shopping for maintenance fatigue risk management resources. It will help you identify and address the fatigue-based hazards that may exist within your organization or your life. While the AC provides detailed scientific references this summary provides overview information.

**Take it or Leave it.**

"You don't need a weatherman to tell you which way the blows" (Bob Dylan). And, you don't need the government to control every aspect of your wakeful and sleeping hours. All segments of the industry know that worker fatigue is a potential hazard.

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http://www.faa.gov/about/initiatives/maintenance_hf/fatigue/publications/media/december_2016_newsletter.pdf

https://www.faa.gov/about/initiatives/maintenance_hf/fatigue/publications/

# NASA's reconfigurable radio can track planes over oceans

The radios will head to orbit aboard Iridium Next satellites.

When the 66 Iridium Next satellites are already in orbit, air traffic controllers and pilots will be able to track all flights, even planes flying across ocean. That's because the satellites are equipped with reconfigurable radios called AppSTAR, which NASA built together with Florida-based Harris Corporation. AppSTARs are capable of transmitting larger amounts of data than NASA's current radio communications network can. Plus, they can be reprogrammed from a distance through software upgrades, allowing the agency to tweak them for future missions.These new radios will enable flight tracking over oceans, since they were designed to receive signals from new airplane transceivers called ADS-B. The transceivers automatically send out a flight's number, location and other details. Harris systems engineer Jeff Anderson says "you can keep track of all the aircraft in the world" within seconds once the radios are operational.

The ability to track all flights will allow planes to fly with less space between them and to take shorter routes to save fuel, since they'll have little risk of colliding mid-air. If anything does go wrong, search rescue operations will now have the plane's exact location.

A SpaceX flight that took off earlier this month ferried the first 10 Iridium Next satellites to orbit, and the company is slated to launch more this year. If everything goes according to plan, the network (and its radios) will be up and running in 2018.

## Air Safety Institute Expands Education Effort

The AOPA Air Safety Institute has launched a new initiative, the Safety Alliance, which brings together safety-related resources from across the industry in one location online. The content, all of which is free to all pilots, is organized by topic on its own Safety Alliance webpage. “ASI is proud to provide a common platform for anyone who is passionate about aviation safety education,” said Katie Pribyl, a spokesperson for AOPA. “Further improvements to GA safety requires a team effort and isn’t something we can do alone. We know that many other organizations provide high-quality safety-focused content and we want to make it easy for pilots to find that information.”The content covers a wide variety of topics, including aerodynamics, aircraft ownership and maintenance, emergency procedures, flight planning, thunderstorm avoidance and more. Most links at the site lead to free instructional videos and webinars. New links will be added regularly, AOPA said. AOPA’s Air Safety Institute, which was established in 1950, provides pilot education and safety programs for all of general aviation, at no cost to users.

https://www.aopa.org/training-and-safety/air-safety-institute/safety-spotlights/safety-alliance

## 60 years later, a plane crash and a jail prove ‘a blessing’ for one survivor

On Feb. 1, 1957, Miami-bound Northeast Airlines Flight 823 took off from New York’s La Guardia Airport in near-blizzard conditions. Less than a minute later, its twisted wreckage lay engulfed in flames in a jail yard in a wreck that killed 20 and remains one of the most enigmatic crashes in aviation history.


Poughkeepsie New Yorker FINAL

74 Survive N.Y. Plane Plunge, 20 Die

Harriman Opens Kingston Bridge

Many Injured; Inquiries Started

In retrospect, the flight seemed doomed from the beginning: Its pilot had already been involved in two prior crashes, takeoff was delayed more than three hours and the weather was fierce. But what followed, after the plane dived into the grounds of the Rikers Island jail, added to the grim mystique that still surrounds the incident to this day.“It was my first flight and my last flight; I never flew again,” Phyllis Naylor, 91, a crash survivor, told Fox News from her home in Langhorne, Pa. “My husband Charles had heard that the back of the plane was safer, so that’s where we were.”

Flight 823, a Douglas DC-6A, was scheduled to leave La Guardia at 2:45 p.m. but wasn’t clear for takeoff until 6:01 p.m. Crash investigators would later determine it reached an altitude of just 200 feet before going down.

The takeoff seemed fine, Naylor noted. "But then I saw this 'oh-my-God look' on my husband's face; in an instant, the plane listed, the left wing was cut off and our side of the plane was tipped up real high."

Seconds later, the plane was on the ground. As survivors among the flight’s 101 passengers and crew stumbled from the wreckage and into the snow, their flesh burning and their cries piercing the evening air, Rikers Assistant Deputy Warden James Harrison made the unprecedented decision to release prisoners to aid in the rescue. It may have saved lives: The city’s own first-responders were delayed getting to the scene by bad weather and a remote location.

Naylor and her husband, who were going to Miami to celebrate his new gig as piano soloist in the Fred Waring Band, managed to get out of the plane, and jumped into a pile of snow. Naylor remembers that Charles and another passenger rolled her around in the snow and hers and Charles' hands and face were dripping. "We realized eventually that it was our burning skin sliding off."

"The night was silent, except for the screams," Naylor said.

Phyllis and Charles Naylor were taken to the prison chapel, and by the time they were transferred to Albert Einstein Hospital, "my hands looked like toasted marshmallows," Naylor said. "It was the worst pain of my life."

Angel Gorbea, who witnessed the crash from his cell at Rikers Island before racing to the scene, told The Associated Press at the time: “The whole sky, even through the snow, was lighted. We, the prisoners, stood at the windows. We saw people tumbling out of that ship -- they were all lighted, too, by the flames. We saw them and their shadows.”

Tugboats maneuvered to the scene, slogging through the East River to reach the victims.

“When we got there, people were falling out of the wings of the plane and the fuselage,” tugboat Capt. Earl Jensen told WNYC reporter Monroe Benton.

The Naylors spent two months in the hospital, and Charles' hands were so damaged that he was unable to resume his career as a pianist. Charles, who died in 1994, put his energy into composing music, unable to stretch his hands in the way required to perform classical pieces. Phyllis was a high school English and drama teacher.

The pilot, Capt. Alva Marsh, later told investigators he believed the plane struck a pole, causing it to dip sharply left and sending it downward. Upon impact, the plane’s left wing was sheared off and its outboard engine ripped from its mounting as it burst into flames.

Marsh had been in the cockpit during crashes in 1952 and 1953. In each of those accidents, no one died. This time, the dead included a child.

Inside the jail, Harrison gave the order to release more than 50 inmates known as “trusties” -- prisoners whose good behavior had earned the guards’ trust. They raced to the scene to help stunned passengers and crew. Every single inmate returned to their cell later that night.

One stewardess who worked the flight, Doris Ostermann, suffered catastrophic injuries shepherding passengers to safety.

"She was terribly deformed; her nose and ears were burned away," Paula Aubee, Ostermann’s niece, told Fox News.

"It was shocking as a child to see those physical traits," recalled Aubee, who was 8 at the time of the crash. "But my aunt was always fun-loving. She never lost that."

Ostermann, who was Doris Steele at the time of the crash, had aided in two historic airlifts during the 1940s: She led Jewish refugees from China to Israel and participated in the Berlin Airlift.

"She loved every minute of being a stewardess and was outrageously in love with flying," Aubee said. As Ostermann healed, Aubee remembered how her aunt said she couldn't wait to get back on a plane, although her injuries kept her from a career as a stewardess. "She couldn't pick things up."

"She was an adventurer. She was this fairy godmother to us," said Linda Nilsson, another niece of Ostermann, "bringing us things from all around the world."

Ostermann died in 2010 of a stroke at the age of 87.

For their part in the rescue, 30 of the 57 inmates who ran to help were released and another 16 had their sentences reduced by the New York City Parole Board. Mayor Robert Wagner bestowed on Harrison the Correction Department's highest award: the Medal of Honor.

The Civil Aeronautics Board investigators determined that Marsh's inability to properly interpret the plane's flight instruments was the probable cause of the crash. Marsh never again flew an airliner. He was reassigned to a desk job at Northeast Airlines. He died in Florida in 1985 at the age of 78.

The crash shows that "life is uncertain and men are frail and make mistakes," Alvin Moscow, who wrote about the Flight 823 crash in his book "Tiger on a Leash," told Fox News. "This is one crash where everything that could go wrong with a plane did go wrong."

For Phyllis Naylor, the crash was, in some odd way, "a blessing."

"You remember the kindness -- of an African-American inmate who gave me a cloth to wrap my hands, of the doctor who treated my burns. Truth is, we had a wonderful life; it has made me appreciate everything."

**CLICK TO SEE PHOTOS OF THE FLIGHT 823 CRASH**

**CLICK TO READ THE CIVIL AERONAUTICS BOARD REPORT**

**https://www.amazon.com/Tiger-leash-Alvin-Moscow/dp/B0007FXVQI/ref=sr_1_1?s=books&ie=UTF8&qid=1485464664&sr=1-1&keywords=tiger+on+a+leash**

## Can aviation beat human frailty?

To people who like to fly, perhaps to most people, fear of flying seems such an irrational fear. As our annual report on airline safety shows, accident rates are very low and trending firmly downward.

On any given flight, the chance of incident – let alone injury or death – is almost vanishingly small. Fear makes no sense; save that for the drive to the airport.


But do not dismiss the fearful. Three aspects of flight safety remain stubbornly difficult to address, and all are growing threats. Technology can help, but all of them share a characteristic that even improved automation will not completely overcome: human frailty.Pilots – human one and all – are better trained than ever. They enjoy assistance from flight control computers, advanced sensors, navigational technology and modern communications for which their forebears would, figuratively speaking, have died. But they are also liable to be fooled once in a while; under the right conditions, if confronted with conflicting information or a system failure, they can easily turn a recoverable event into a crash. No industry has studied human factors more closely than aerospace, but a completely reliable training regime has proved elusive.

Pilots, too – being human – are subject to mental illness. Modern life is stressful, the society-wide incidence of mental illness is on the rise and more airline pilots than ever are needed to keep the world flying. As a result, more incidents like the 2015 Germanwings pilot suicide can realistically be expected.

On the ground, security remains a weakness. The past couple of years have illustrated how much variation there can be in the quality of screening of airport and airline workers and passengers – and of cargo. History shows us that criminals, terrorists, militaries and even lunatics are nothing if not resourceful; close off one loophole and another is found. Aircraft are attractive targets, and if they are too well protected then airports are vulnerable, too. The best security remains the diligence of all-too-frail humans.

In the corporate headquarters, human bosses have to juggle conflicting demands. To be perfectly safe, an airline would not fly at all, and the ultimate money-making machine would be a safety nightmare.

The human weakness here is our capacity for self delusion. Stories are legion of management teams that convince themselves they are doing a good job while ignoring or smothering warnings to the contrary. In an airline safety context, the result is catastrophe.

## Airline Pilot Is Third Most Stressful Job You Can Have

**CareerCast Rated A Number Of Careers Based On Multiple Criteria**

Glamorous, prestigious, and respected are some of the adjectives that come to mind when someone mentions the words "airline pilot". Now, CareerCast says you can add another, less enticing description: "stressful".

Piloting an airliner is the world's third most stressful jobs, according to job seekers website.

CareerCast rated numerous careers based on multiple factors, including:

Travel

Career growth potential

Physical demands

Environmental conditions

Hazards encountered

Meeting the public

Competition

Risk of death or grievous injury

Immediate risk of another's life

Deadlines

Working in the public eye

The online magazine Travel and Leisure says that it makes sense that being an airline pilot is a stressful position, given that they can be responsible for hundreds of lives sitting in the back of the airplane to destinations around the world.

According to CareerCast, airline pilots have a median income of $102,520, but the Stress Score came in at 60.54, and the growth outlook for the industry is only 5 percent, according to the report.

That does seem to run counter to the "pilot shortage" that is often discussed by the industry.

As a side note, and of interest to at least the person sitting at this keyboard … newspaper reporter and broadcaster made the list of most endangered jobs.

The most stressful job as rated by CareerCast.com is enlisted military personnel. The median income is $27,936 and the stress score is 72.74. The growth outlook was "not applicable."

## Passenger discovers missing screws on wing of Frontier airplane

Frontier Airlines is investigating why a plane flew with about 20 screws missing from an area near the front of the wing, Denver7 Investigates confirmed with officials Friday.

A passenger noticed the missing screws on a Frontier Airlines Airbus 319 from Trenton, N.J., to Punta Gorda, Fla., on January 5 and notified the captain.

The aircraft was grounded by the company until the fasteners were received and installed, FAA spokesman Allen Kenitzer told Denver7 Investigates.

Frontier spokesman Jim Faulkner said the issue was not severe and the plane returned to service that same day.

"The panel remained sealed and secured at all times, and at no time was safety compromised," Faulkner said. "Frontier voluntarily disclosed this information to the FAA upon learning of the missing fasteners and has been coordinating with the FAA to determine what happened."

The screws were missing from a section where the front slats meet the fixed part of the wing. Slats, like flaps, can be extended to create lift. Slats are often extended during landing to assist the plane in staying airborne when the speed of the plane is reduced.

Denver aviation expert Kevin Kuhlmann said the missing screws on this specific section of the plane are unlikely to cause problems in flight, but he says it would be important for an airline to uncover how this occurred. Kuhlmann is the associate chair of Aviation and Aerospace at Metropolitan State University of Denver.

"The concern is what safety measures were missed thus allowing this oversight and what unseen issues may occur in the future," Kuhlmann said Friday.

## EasyJet take-off data incident uncovers software anomaly

Investigations have traced an EasyJet A319 take-off performance incident at Malaga to a software anomaly in a particular electronic flightbag function.

The flaw enabled the flightbag to display information for two different runways simultaneously, which led the crew to use take-off calculations for runway 13 during a departure from runway 31.

EasyJet subsequently disabled the function – known as 'multiple runway computation' – from the flightbags on its fleet a couple of weeks after the 14 April 2016 incident.This function of the Airbus FlySmart software is designed to calculate take-off performance for several selected runways to provide a comparison to the crew.

But UK Air Accidents Investigation Branch analysis found that the software could display detailed information for one runway while simultaneously showing take-off performance data for another.

"The flight crew did not notice this during cross-checking," says the inquiry, adding that neither Airbus nor the carrier was aware of the software anomaly at the time.

Investigators state that the flightbag had used an earlier version of FlySmart, and that the later versions are unaffected.

When the pilots undertook critical data entry checks, they did not notice that, while the intended runway 31 had been selected from a menu box at the top-right of the flightbag display, a results section on the same page was still showing data from runway 13.

"As most of the take-off performance calculations were usually performed using the 'single runway' option, the crew were familiar with verifying the selected runway in only one place – at the top-right of the screen," says the inquiry.

"With a particular runway selected at this upper position on the screen, it is possible to make the assumption that the corresponding take-off performance figures on the 'results' page are related to that runway."

The two runways are physically the same length, but runway 31 departures head inland towards rising terrain, while departures from runway 13 head out to sea.

Although the take-off was normal, the captain had noted that calculated speeds and the thrust-reduction altitude were lower. He assumed the carrier had changed some of the aircraft's performance algorithms but, nevertheless, checked the calculations during the cruise, at which point he noticed the discrepancy in the displayed runway data.

## Nothing to Stand On


It was nearing the end of the day in the avionics shop when we got an inquiry from Maintenance Control about a TD amplifier test for one of the aircraft. An AE2, an AT2 and I eagerly headed to aircraft and begin work. We checked out the PPE and tools and walked to the hangar.We needed to work on the top of the port side of the engine nacelle, which meant we had to use a B-5 support stand. I moved a nearby support stand into position with the aid of the AT2. After securing our cranials, the three of us climbed onto the stand. We'd quickly looked over the stand, but hadn't done the full pre-op that was required. No one read the warning label that said the stand had a 500-pound capacity.

I started jacking up the stand several feet to allow access to the two engine panels. We didn't use the stand's safety-pin system, which (if hydraulic pressure were lost) would prevent the stand from lowering. I began to remove the safety wire securing the TD amp cannon plugs. The AE2 headed back to the shop for the laptop with the pubs. He was immediately replaced by a fourth mech, an AEAN, so there were still three of us on the stand.

As I was working on the last line of safety wire, I didn't notice that AE2 had returned and was climbing up the stand's static ladder. Immediately after the AE2 put both feet on the dynamic portion of the ladder, the hydraulic system failed and the stand fell several feet. The AE2 had safely positioned his feet on the stand's ladder. Had his feet been getting between the collapsing dynamic ladder and the static ladder, he might have broken his feet or legs.

Between the four of us and our tools, we had put more than 800 pounds on the support stand, far exceeding the capacity.

## This Unbreakable Racing Drone Is Perfect For Terrible Pilots

There's a reason nature uses eggs to protect offspring who develop outside their mothers. Domes are inherently strong and durable, so it also makes sense to build a drone with a similarly bulbous shape to help it survive crashes, collisions, and other accidents when an amateur pilot is at the controls.


The DJI Phantom 4 Is the Best Drone I've Ever Crashed.

The DJI Phantom 4 is a slick, feature-packed drone. People say it's the drone that anybody can fly, ...

But an egg-shaped fuselage isn't the only thing the Nimbus 195 racing drone has going for it in the strength department. Even an egg will shatter when thrown against a wall, so the Nimbus 195 improves on nature's design with a one-piece exoskeleton body made from lightweight but incredibly strong carbon fiber that's up to four millimeters thick in some places to help ensure the drone can survive a rough landing.

Even the propellers on the Nimbus 195 look like they can take a beating, since they're made from malleable plastic that bends on impact, instead of shattering, so they can simply be bent back into place for the next flight. But propellers are cheap to replace, drones aren't, so in addition to being able to survive a punishment as extreme as being run over by a car, the Nimbus 195 is even IP 54-rated which means that the drone getting a little wet when landing in a puddle isn't going to fry its electronics.

Aerodyne RC, the creators of the Nimbus 195, have created an Indiegogo crowdfunding campaign with the hopes of raising $30,000 to help put its racing drone into production-but that doesn't mean it's going to come cheap.

If you're already an experienced drone racing pilot, you can pre-order just the Nimbus 195 carbon fiber body for $160, with delivery expected sometime next month. But if you're a novice, and need everything from the carbon fiber body, to the electric motors and electronics, to even a controller, the full Nimbus 195 package will set you back $750. That's certainly expensive, but at least there's little risk of you completely destroying it on your maiden test flight.

https://www.youtube.com/watch?v=F8cOj_N8Zfg

## Extreme Team Building Puts Employees Through a — Plane Crash?

A self-survival coach is teaching her skill set to businesses to help improve office camaraderie and productivity.
Maria C. Hanna, the president of Survival Systems USA, is marketing her survival skills courses to companies as a team-building exercise, the New York Times reports.

Her company successfully trained 99 percent of the more than 100,000 individuals who have participated in the firm's programming. Survival Systems boasts more than three decades of research and innovation in underwater egress training and survival techniques.

Trainees have shown "improved morale, self-esteem," and even learned of "capabilities people didn't know they had," Hanna tells reporters. Recently, Hanna and her partners thought to themselves: "You know, this is something that can appeal to a market in a different way, using the tools from aviation to help people develop themselves." All of a sudden, the thought to bring their classes to the wider marketplace was born. Hanna says the six-hour, one day course will be offered for $950 per person, a price comparable to other one-day team building programs company's employ.

## Welcome to Extreme Team Building

Those participating in the course are given instructions about teamwork, leadership, and safety procedures. After lunch, they are led into a room where the Modular Egress Training Simulator, a complete replica of the cockpit of almost any helicopter or small plane. The participants then jump into the pool, and the proverbial games begin. Each participant is assigned a leadership role, and strapped into the simulator.

When locked into position, the participants are submerged into the pool and flipped upside down. An instructor sits behind each team member, ready to bring them to safety if anything goes wrong.

While no one has drowned during the exercise, one business owner reports that three of his employees "blacked out" during the simulation, the New York Times reports. The owner says that even though this program is more expensive than some other options, like a $50 ropes course, he thinks the experience is worth it. "You get to see how people handle stressful situations," he reports, adding that it "really unifies the team."

## Fall Asleep in Tom Brady's New Under Armour Pajamas

Tom Brady, an NFL quarterback who boasts an early bed time, is collaborating with Under Armour on a line of high tech pajamas, reports Time.

On Thursday, the apparel giant is unveiling "UA Athlete Recovery Sleepwear Powered by TB12" at the Consumer Electronics Show, which is essentially a commercial version of Brady's tricked-out pajamas that cost between $80-100. The inside of this fitted garment—which comes in long or short sleeves and pants or shorts—is equipped with a soft bio-ceramic print, which can produce something called far infrared energy when combined with the body's natural heat. The company touts far infrared energy as a sleep aid and is promising its Brady gear will reduce inflammation, regulate cell metabolism, and improve circulation, helping the body recover faster and fostering better sleep. (The packaging includes Brady's six keys to better sleep, such as "keep your room clean. Contaminants like animal dander and dust restrict your breathing.")

http://time.com/4621309/under-armour-tom-brady-sleepwear-pajamas/

## Simple Ways to Walk 10,000 Steps a Day

How to ensure that you are meeting your fitness goals on a daily basis

With the increasing popularity of health and fitness tracking devices, Americans are becoming more attuned to the idea of walking 10,000 steps every day.

Both the American Heart Association and Centers for Disease Control endorse the goal as a means to help individuals stay fit, but the number of steps itself might seem insurmountable to someone who is tethered to sedentary obligations for much of the day.Walking 10,000 steps every day might actually be simpler than it seems, however. It may merely take a steady and consistent approach, requisite motivation and a few simple tricks.

## Force yourself to walk where you otherwise would not

Since a 10,000-step total is not a small distance to cover, it is perhaps not the wisest or most practical approach to attempt to achieve it all at once. As such, U.S. News & World Report recommends a number of methods that one can undertake throughout the course of a day to achieve the 10,000-step goal.

If you drive to work on a daily basis and find yourself hunting for the spot closest to the building, instead give yourself an extra five minutes, park in a spot further away, and take more time walking to the office. Once you are in the building, take the stairs instead of the elevator, and be sure that you take a five-minute break to walk a little ways every hour if possible.

If you are in a supervisorial role, consider bringing your team along for walking meetings. When it comes time for your lunch break, pack a small and portable meal and spend the hour walking.

When you get home, take your dog for a walk instead of letting him out in the yard. When doing household tasks like washing dishes or preparing dinner, consider walking in place or pacing while doing so. After you have eaten dinner, consider going for an evening stroll, and walk the length of your home while brushing your teeth before bed.

### Motivate yourself properly

There may be no better way to pad your daily step number than by breaking that number down into more digestible bites. Sparkpeople.com recommends attempting to parse out steps into thirds – walking in the morning, day and evening – or trying to work in 1,000 steps every hour during the work day.

Bringing a friend in on the charge of walking 10,000 steps is also effective at amplifying motivation, creating a naturally nurturing environment that allows for mutual encouragement. If you and your partner like to catch up with one another after work, consider doing it on a 15 – 20 minute walk around the neighborhood when weather permits.

Ultimately, it is important to remember that walking 10,000 steps a day is only part of the larger picture of health. To ensure the effectiveness of this practice, couple it with regular exercise and healthy eating.

## TED: Ideas Worth Spreading

Nature's beauty can be fleeting — but not through Louie Schwartzberg's lens. His stunning time-lapse photography, accompanied by powerful words from Benedictine monk Brother David Steindl-Rast, serves as a meditation on being grateful for every day.

https://www.ted.com/talks/louie_schwartzberg_nature_beauty_gratitude