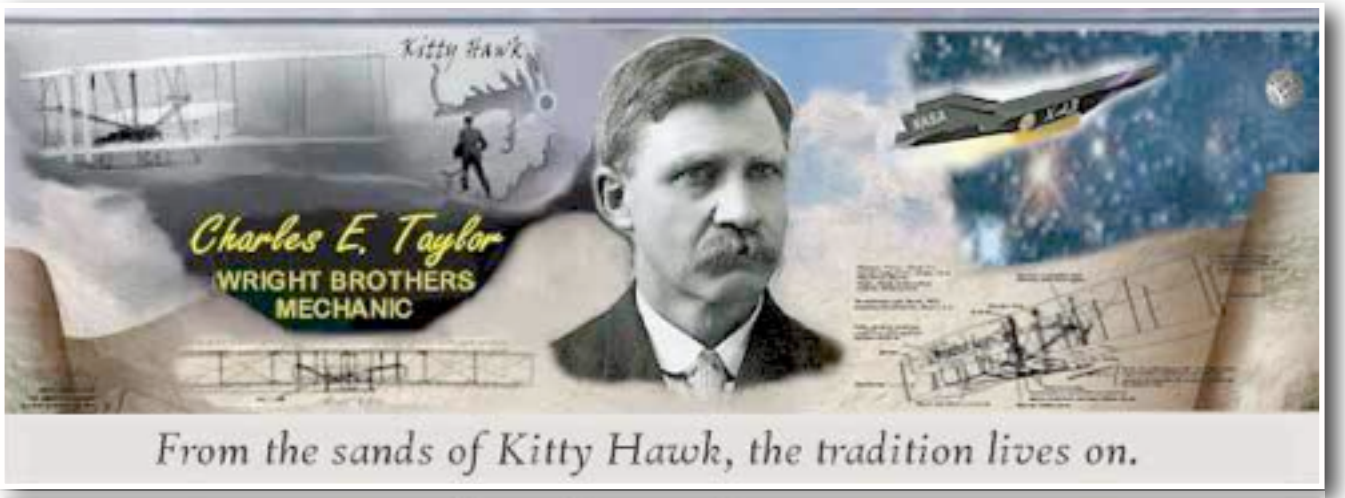
Aviation Human Factors Industry News

Volume VII. Issue 31, August 19, 2011



Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com

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

MANAGING FATIGUE EDUCATIONAL PROGRAM

This month's calendar page and article authored by Charles Alday of the Pipeline Performance Group are about the difficulties most people have sleeping in the day time even after working all night. Most of us who have worked rotating shifts just had to sleep as much as possible and tough it out on those night shifts. Now companies have to put fatigue mitigation measures in place to reduce the risks of fatigue all the time, but particularly between 0200 and 0600. Good luck with your fatigue risk management system!

Charles was talking with a client last week who puts these articles in "required reading" to document that they are providing fatigue management education materials. That might be a good practice for you, if your company uses required reading.

Sleeping in the Daytime

For sleep, one needs endless depths of blackness to sink into; daylight is too shallow, it will not cover one. ~ Anne Morrow Lindbergh

One pipeline controller said he goes home, eats a light breakfast, takes a shower, and then sleeps for nine hours in the daytime. He also does the same thing when he's working day shift. I think he is an unusual human being.

Do you sleep well in the daytime?

I would sleep about five hours after working a night shift, then start tossing and turning before giving up and getting up. And I slept less than five hours if there were noises: phones ringing, children playing, workers working, dogs barking, or other normal sounds of daytime life. I got by on that five hours, but I was usually fatigued and less alert on the night shift.

What keeps you awake in the daytime?

If a person works at night and cannot sleep eight hours in a row in the daytime, another idea is to nap an hour or two before going to work the next night. What are your tips for sleeping in the daytime?

The “Sleep in America” poll states that the average American averages six hours, 55 minutes of sleep most nights. The Pacific Sleep Center reports that “the average sleep cycle for a night shift worker sleeping during the day is two to four hours shorter than that of a day worker sleeping at night. Day sleep is light, fragmented, and more likely to be disrupted. Sleep deprivation and insomnia can be severe in shift workers.

If one puts those two statements together, a night shift worker might be getting by on three to five hours of sleep in the daytime. The difficulty with those statements is that every person is different and some night shift workers may be sleeping seven or eight hours every day. It’s best if you’re able to do that.

Sleep is the only effective antidote to fatigue But if you are working nights and only sleeping three to five hours between shifts, you are going to have to take some specific actions to be alert at work.

These work for some people:

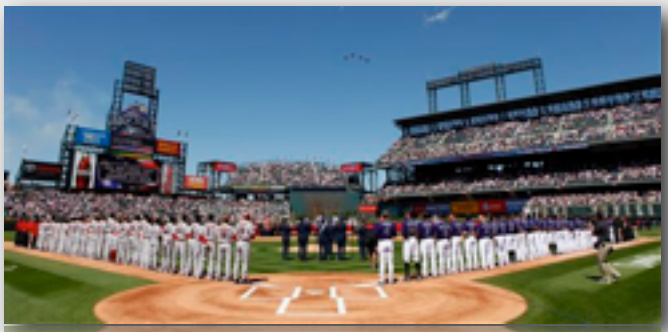
- ☒ Drink a cup of coffee or caffeinated soft drink
- ☒ Drink plenty of water
- ☒ Stand up, instead of sitting down and do not recline
- ☒ Walk around for five to ten minutes every couple of hours
- ☒ Keep the room cooler than you want it to be
- ☒ Work under bright lights
- ☒ Perform some light exercises and stretches
- ☒ Listen to upbeat music
- ☒ Have a lively conversation in person or on the phone

How do you stay alert on night shift?

The best practice is to sleep eight hours in the daytime, but many of us cannot do that. Sleeping in the daytime is against human nature. Night shift workers must sleep as much as possible, then do other actions to mitigate fatigue effects.

If you know others who might be able to use these articles, please forward this e-mail to them. The articles for previous month are at charlesalday.com

Sleep Type Predicts Day and Night Batting Averages of Major League Baseball Players



A Major League Baseball player's natural sleep preference might affect his batting average in day and night games, according to new research.

Results indicate that players who were "morning types" had a higher batting average (.267) than players who were "types" (.259) in early games that started before 2 PM.

However, evening types had a higher batting average (.261) than morning types (.252) in mid-day games that started between 2 PM and 7:59 PM. This advantage for evening types persisted and was strongest in late games that began at 8 PM or later, when evening types had a .306 batting average and morning types maintained a .252 average.

"Our data, though not statistically significant due to low subject numbers, clearly shows a trend toward morning-type batters hitting progressively worse as the day becomes later, and the evening-types showing the opposite trend," said principal investigator and lead author Dr W. Christopher Winter, medical director of the Martha Jefferson Hospital Sleep Medicine Center in Charlottesville, Va. The study involved 16 players from seven MLB teams: the Houston Astros, Los Angeles Angels, Los Angeles Dodgers, Pittsburgh Pirates, St Louis Cardinals, San Francisco Giants, and Toronto Blue Jays. Sleep preference was determined using a modified version of the Morningness-Eveningness Questionnaire (MEQ). It identifies a person's tendency to be either a morning type who prefers to go to bed and wake up early, or an evening type who prefers to stay up late at night and wake up late in the day. Nine participants were found to be evening types, and seven were morning types. Both groups had a mean age of 29 years.

The study used the players' statistics from the 2009 and 2010 seasons, which allowed for the analysis of 2,149 innings from early games, 4,550 innings from mid-day games, and 750 innings from late games. Game start times were adjusted for travel using the principle that for every time zone crossed, it takes 24 hours to adjust.

"These results are important as they create an entirely new way to look at athletic talent," said Winter. "Currently, selecting a player for a game situation usually involves factors such as handedness, rest, and possibly previous success against a certain team. Now, the time of day in which the game is occurring and a player's chronotype might be a wise factor to take into account."

Michelin Celebrates Final Space Shuttle Landing

The space shuttle Atlantis touched down for the last time, landing once again on MICHELIN® tires. Michelin has been manufacturing the space shuttle tires at its Norwood, N.C., aviation tire plant. “It was a proud moment for Michelin and NASA to watch the close of the space shuttle era,” said Ron Olds, vice president of sales for Michelin Aircraft Tires. “The final landing closed a 30-year chapter in American history that showcased some of the greatest technological advancements spurred on by the American spirit. Every aspect of the shuttle program — down to the tires designed to dependably return the spacecraft safely to earth — is a tribute to the American ‘can do’ attitude.”

The tires for the space shuttle undergo extreme conditions — from landing at speeds up to 288 mph to carrying loads as much as three times that of a Boeing 747 tire, which is the equivalent of a 40-car starting line-up at a NASCAR race.

The tires weigh approximately 230 pounds and each tire takes approximately six hours to build. The space shuttle takes six tires — four main-landing gear and two nose-landing gear tires — to land. The shuttle tires are inflated up to 373 psi and use nitrogen, which best maintains pressure in varying altitudes and extreme temperatures.

Avoid the Hospital in July

Why? New doctors and nurses report to work for the first time, eager to "practice" medicine on you

In July, many hospitals are staffed by new, inexperienced doctors and nurses. "July is not the time to have elective surgery or another procedure that could be postponed," warns one expert. July is here so you might want to avoid the hospital if at all possible.

Conventional wisdom has long held that the quality of care in hospitals plummets during the month of July. But now a new study published in the Annals of Internal Medicine on July 11 confirms that suspicion. Why is July so problematic?

Because on or around July 1, fresh, inexperienced interns, residents, nurses and other new health care workers first report to work at many of the nation's hospitals, eager to start practicing medicine — on you. The new study reviewed data from 39 previous studies that tracked health results in teaching hospitals — including death rates and complications from medical procedures. The best designed and largest studies, the authors found, showed mortality rates increase 4 to 12 percent in July and revealed that many patients remain in the hospital longer, spend more time in surgery and have higher hospital charges in July than in other months.

John Young, M.D., psychiatrist with the University of California San Francisco and co-author of the study, said the "July effect" occurs when new trainees replace experienced physicians. The new doctors have little experience caring for patients, often aren't well supervised and don't yet know the hospital system.

Even before this latest research, experts have been wary of July.

"You may get more personal attention, but the skill level isn't there," explains veteran physician David Sherer, M.D., past director of risk management for a large insurance provider and coauthor of Dr. David Sherer's Hospital Survival Guide.

"You have newcomers arriving at hospitals — often placed in a sink-or-swim situation — and they don't know where anything is or how anything is done. July is not the time to have elective surgery or another procedure that could be postponed."

As a group, these physicians-in-training are "universally supervised," says Christopher Landrigan, M.D., who teaches at Harvard Medical School and oversees residents at Children's Hospital Boston. But individually, "from day one, residents are writing medication orders and doing certain procedures and diagnostic tests with relatively little direct supervision, so there's always an opportunity for something to slip through the safety net."

That's not to say that midsummer is the only time for potential problems. After all, some 100,000 Americans die from hospital medical errors each year — thousands every month. "But there is good evidence that errors are somewhat more common when residents first begin to work," notes Landrigan.

Most studies exploring the July effect focused on seasonal error rates at specific hospitals. But some research in the past few years indicated that, indeed, more medical errors of various types occur in July and early August than other months — especially at teaching hospitals, which train medical interns and residents and are connected with medical schools. July also is a popular month for others, fresh from college, to begin their health care careers at all types of facilities– including nurses, pharmacists and health technicians and therapists.
Last year a large study examined the July effect on a national level — with an alarming finding.

After analyzing more than 62 million death certificates issued across the country from 1979 to 2006, researchers found that fatal medication errors consistently spiked in July by about 10 percent — but only in U.S. counties with many teaching hospitals — and then subsided in August to levels on par with other months. Yet there was no measurable increase in counties with facilities that don't employ residents, such as community hospitals.

"We were looking for all causes of death occurring in hospitals," explains study leader David P. Phillips of the University of California, San Diego, whose research was recently published online in the Journal of General Internal Medicine, "and found no increase in death from surgical errors, hospital-acquired infection or other causes in any type of facility — only in fatal medication errors at teaching hospitals."

His theory: “With surgery, you have a whole team of people working together, so there’s a lot of redundant checking. But residents prescribe or hand out medication alone.”

Still, others say there are other concerns in July beyond the possibility of getting the wrong medication or the wrong dose.

“Whether it’s assisting in surgery or giving an intravenous line, there’s a necessary learning curve that occurs over time,” says Sherer, a practicing anesthesiologist near Washington, D.C. “I’ve seen it myself: The success rate for first-time IVs is not there among new residents and nurses.” Central-line infection rates, which occur from improperly placed IVs, account for nearly 30,000 hospital deaths a year.

Study finds self-esteem levels vary by age, race

Although Hispanics tend to have lower self-esteem than blacks or whites in the teen years, by age 30 their self-esteem has increased to the point that they have higher self-esteem than whites, a new study suggests.
And in both adolescence and young adulthood, blacks have higher self-esteem than whites. By age 30, whites trailed both Hispanics and blacks in terms of self-esteem, according to the report published online July 4 in the Journal of Personality and Social Psychology.

Researchers at the University of Basel in Switzerland made this finding after analyzing U.S. survey data of more than 7,000 young adults from 1994 to 2008. The participants ranged in age from 14 to 30 years. Over the course of 14 years, the study authors examined how five personality traits (openness, conscientiousness, extraversion, agreeableness and neuroticism) affected the youth's self-esteem.

In addition, the researchers also looked at the participants' sense of life mastery, risk-taking tendencies, gender, ethnicity, health and income.

"We tested for factors that we thought would have an impact on how self-esteem develops," the study's lead author, Ruth Yasemin Erol, said in news release from the American Psychological Association. "Understanding the trajectory of self-esteem is important to pinpointing and timing interventions that could improve people's self-esteem."

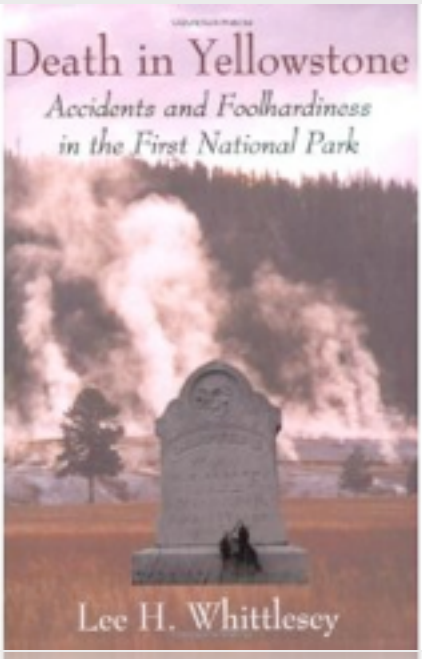
The researchers found that conscientiousness, emotional stability, a feeling of mastery and being extraverted are key to predicting the direction a person's self-esteem will take as they grow up, and that income did not affect this course. These findings, they pointed out, could assist health professionals in targeting treatments.

And, contrary to popular belief, there are no significant differences in the way men and women feel about themselves during those periods of development, the investigators found.

"The converging evidence on gender similarity in self-esteem is important because false beliefs in gender differences in self-esteem may carry substantial costs," said Erol. "For example, parents, teachers and counselors may overlook self-esteem problems in male adolescents and young men because of the widespread belief that men have higher self-esteem than women have."

National park deaths: Random or reckless?

Can you imagine anyone being foolish enough to ignore that safety barricade or the warning signs against standing and wading upstream? Yet, that's apparently what led to the deaths of three young tourists in July. In what park spokesman Scott Gediman called a "chaotic scene," witnesses say a man and a woman, part of a visiting church group, crossed a barricade about 25 feet above the fall and made their way to a rock in the middle of the Merced River to pose for a photo. The woman slipped, and the man reached for her but fell in. Another woman in the group



tried to help but also fell into the water, and all three were swept over the edge. The deaths were the sixth water-related fatalities this year at Yosemite, where an epic Sierra snowpack and a cool spring have translated to unusually turbulent rivers and streams.

But while the incident highlights the dangers of fast-moving water across the West this year, it also raises questions about common sense - or the lack of it - in national parks and other natural settings.

"Yes, the recent accident at Vernal is tragic. But why it happened isn't tragic," writes Santa Rosa Press-Democrat columnist Bob Padecky. "Tragic is hiking somewhere and an errant, falling boulder finds your head. What is so troubling about these deaths at Vernal is that it didn't have to happen. Nature is a thrill ride but there are rules. Hike with a buddy. Carry water. Don't drink or drug up. Don't climb over a railing to inch up on a raging torrent."

The Vernal Fall incident isn't the only recent high-profile example of tourists getting into trouble in national parks or other outdoor settings.

Earlier this month, two visitors from California's Bay Area drowned in Hawaii - one after being sucked into a blowhole on Maui, the other after falling from oceanside cliffs on the Big Island. And July 18, a 30-year-old Missouri woman was rescued by a tour boat from the churning waters of Niagara Falls' Whirlpool State Park after she slipped on a rock and fell in.

"I just wanted to touch the beauty," she told ABC News.

National Park Service spokesman Jeffrey Olson said search and rescue incidents within park boundaries resulted in 160 deaths and 1,658 injuries systemwide last year. All told, 187 people died in the parks (including 34 suicides), out of 281 million visitors.

The Yosemite deaths "are so shocking," he says, because "99% of national park visitors do the things we ask them to do, stay safe, and have a wonderful experience."

But Yellowstone National Park historian Lee Whittlesey, author of Death in Yellowstone: Accidents and Foolhardiness in the First National Park, points out that some travelers forget the "wild" in wilderness.

"Often, what you get is a city visitor who thinks that everything is like a sanitized Disneyland. But nature is inherently dangerous, and that's one of its attractions," says Whittlesey, who notes that many awestruck tourists approach the park's bison without realizing that "these are animals that can charge at 35 miles per hour."

As an adrenaline addict who's sampled my share of outdoor thrills, from skydiving to rafting some of the world's biggest rapids, I admit that some of those choices were risky. And, after this week's tragedy at Yosemite, I'm reminded that common sense and caution should always trump foolhardy adventure.