

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

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

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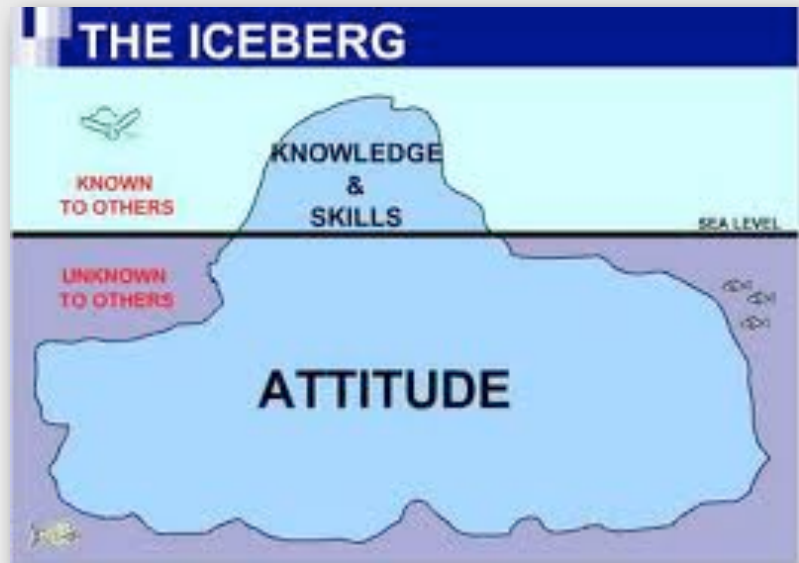
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Safety Begins With Attitude

There are two kinds of people in this world: those who believe they can make things happen, and those who believe things happen to them. The first group is convinced that the outcome of their lives and careers is more or less in their own hands, and they wouldn't have it any other way. The second group takes more of a Forrest Gump approach — they sit around and wait for the bus to take them somewhere. A [good safety attitude](#) starts with being prepared and taking of your own safety. One of the easiest ways to prepare for the task at hand is to use “Think 5” principles.



Think 5 seconds ahead, not 5 seconds behind.

- What am I about to do?
- What are the hazards?
- What could change?
- What is the safest way to do the work?
- What resources do I need?

[Remember your attitude](#) – not your circumstances – determine much of your success and happiness – Be safe for your family, your coworkers, and yourself! Believe that you can make a difference and help all of those that you cherish make decisions by thinking 5 ahead not 5 behind.

Airplane Smuggling Plot Lands Mechanic In Jail For His Role

Sentenced To Two Years Despite No Criminal History

A judge in West Palm Beach said **he needed to send a message** to anyone trying to work around trade sanctions against Iran when he sentenced 53-year-old airplane mechanic Diocenyr Ribamar Barbosa-Santos to two years in prison. The sentence came despite a recommendation from the prosecutor that Barbosa-Santos be sentenced only to probation and community service.

The mechanic, who has no prior criminal record, was charged with trying to undermine national security for attempting to secure financing to smuggle several civilian airliners to Iran through China ... a transaction reportedly worth \$136.5 million, according to a report appearing in the south Florida Sun Sentinel. Prosecutor Michael Walleisa described Barbosa-Santos as a "hard working family man **who just got greedy**." Judge Daniel T.K. Hurley disagreed. He said Barbosa-Santos was guilty of an "enormously serious offense." He said that the reason trade sanctions against Iran appear to be having some effect is because "people like Barbosa-Santos fail."

Barbosa-Santos had been working to facilitate the transfer of seven A300 airliners from China to Iran. His brokerage fee would have been in the neighborhood of \$273,000.

As a result of his participation in the scheme, not only will he be spending two years in prison, but he **was fired** by a major airline and will likely never work in aviation again. He has also lost his house to foreclosure.





During a standard engine turn, I was serving as the plane captain (PC). Even though I was junior, I observed the right trailing edge flap (TEF) extend to full [while giving the signal for half flaps](#) and I noticed that door 64R was open. I then saw the TEF drive into the door 64R causing the metal to crunch and bend in three different directions, causing a Class C mishap. I then asked myself, “[How did we get here?](#)”

It was a typical evening in the squadron and I was the PC chosen for the turn. Our goal for the night was to conduct a low power turn (LPT). This particular aircraft had recently gone through extensive maintenance and would require a full systems turn to assess systems performance. Upon reporting to the flight line, the LPT operator (LPTO) asked me to verify the circuit breakers were pushed in and to secure the aircraft. Once secure the LPTO asked me to help push the starboard TEF up so that she could verify doors 64R and 68R connections. After verifying all connections and fittings, the LPTO continued a walk-around before proceeding to the cockpit for the turn.

As the PC, I took my position near the front of the aircraft and awaited the startup signal from the LPTO. Upon receiving the go ahead from the operator, I gave the “clearout” signal and then began to signal for the auxiliary power unit (APU) startup. A mechanic from the engine shop held door 68R away from the APU blast. The operator “wind milled” the engine for three minutes and then we secured the engine for servicing. Following servicing, we closed door 64R but left door 68R hanging. Once personnel were clear we began the start sequence; however, the engine would not start. After some quick troubleshooting the maintainer [discovered that the fuel control breaker was not pushed in](#). He reset the breaker and gave the signal to try starting the engine again. The LPTO then began to start the aircraft and the engine started up.

Once the right engine came up on power, one of the troubleshooters involved in the turn gave the signal to open door 64R. I then gave the LPTO the “hands off” signal and the door was opened. [It was then that things went horribly wrong](#). The starboard TEF traveled to the “full” or down position. The movement caused severe damage to the TEF and the AIM-7 illumination antenna. I then gave the signal to shut down the engine and we began to survey the damage [and count our blessings](#) that nobody was injured.

Upon completion of the mishap investigation it was determined that the major fault of the incident was [lack of communication](#) and the fact that we did not conduct a thorough preturn safety brief. Had we completed the brief, all of us would have had a clear understanding of responsibilities, and what was going to be checked. We would have also been aware that the flaps would extend to their commanded position upon startup. Also, as a junior PC, [I should have had a clearer understanding of my duties and responsibilities during the turn](#). We can’t always guarantee a mishap-free environment, but we can significantly reduce the possibility of a mishap with proper planning, deliberate, and Time Critical Operational Risk Management.

NTSB: Plane that crashed near Phoenix in 2011, killing 6, wasn't equipped with warning system

Investigators say a plane that crashed in Apache Junction in 2011 wasn't equipped with a warning system that might have helped the pilot avoid the accident that killed six people.

The National Transportation Safety Board issued a factual report into the Nov. 23, 2011 crash in the Superstition Mountains. A man and his [three young children died in the fiery crash along with the pilot and an avionics technician](#).

The plane was en route to Safford when it slammed into face of a 5,000-foot-tall mountain.



NTSB investigators say the plane wasn't equipped with a Terrain Awareness and Warning System.

The Arizona Republic reports that under federal regulations, all planes built before 2002 with six or more passenger seats [couldn't be operated](#) after March 2005 without the warning system.

TAIC opens inquiry into Antarctica flight safety incident

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The Transport Accident Investigation Commission has opened an inquiry into a [safety incident](#) which involved a Royal New Zealand Air Force Boeing 757 landing in Antarctica on 7 October 2013 in weather [below minimum](#) standards for landing and with [insufficient fuel](#) to reach an alternate airport.

The RNZAF had advised the Commission of the incident and information provided since and had allowed the Commission to determine it should and could investigate under the Transport Accident Investigation Commission Act 1990, chief investigator of accidents Captain Tim Burfoot said. "The Commission's inquiry will work alongside but independently of the Air Force's own investigation of the incident."

"While the Commission is precluded from investigating incidents and accidents confined to New Zealand Defense Force resources, this occurrence [involved a combination](#) of military and civilian personnel and services," Captain Burfoot said. He said it was too early to say how long the investigation would take or whether international participation in the inquiry would be required.

The Commission is a standing Commission of Inquiry that investigates occurrences with significant implications for transport safety in order to explain them and make recommendations, where appropriate, [to help improve transport safety and prevent a recurrence](#).



Russian Pilots sentenced to prison over fatal accident.

The An-24 crashed into trees on approach to Igarka

A Russian court sentenced a former airline pilot to 4 ½ years in prison for his role in the accident of an Antonov 24 passenger plane that killed 12 people in 2010.

On August 3, 2010, Kateravia flight 57 from Krasnoyarsk crashed while on final approach to Igarka Airport **in night time and poor visibility conditions.**



It struck trees at a distance of 477 meters short of the runway and 234 meters to the right of extended centerline. It came to rest after sliding 140 meters through trees. A fire broke out, destroying the aircraft. All eleven passengers and one of the three crew members were killed in the accident.

The Russian Interstate Aviation Committee (MAK) concluded that the weather conditions **were below minima.** The crew failed to take a timely decision for a missed approach when the plane descended below the minimum safe height (100m) in the absence of reliable visual contact with approach lights and runway lights. MAK stated **that incorrect weather reports transmitted to the crew** were a factor in the accident.

The court in the city of Krasnoyarsk, Siberia, ruled that the captain of the flight could have averted the accident **by waiting for better weather conditions,** but instead continued his landing approach in poor visibility. The captain blamed the air traffic control service and the airport's meteorologists, saying that **they had misled** the flight crew, but the judge rejected his arguments. The captain is going to appeal the verdict.

Safety Researchers Suggest Autopilot Redesign

Before control of an aircraft shifts from the autopilot to the pilot, the system **should require the receiving pilot** to acknowledge that he or she has assumed control,

according to a recent study of ergonomics and flight safety. Eric Geiselman, lead author of a two-part study published in *Ergonomics in Design*, emphasized that the warning **should occur before the autopilot is disengaged**, not after, as is currently required. "The sudden disengagement of autopilot is analogous to a pilot suddenly throwing up his or her hands and blurting to the co-pilot, 'Your plane!'" said Geiselman. The study, which focused on two high-profile 2009 crashes -- Colgan Air in Buffalo and Air France off the coast of Brazil -- concluded that current autopilot design is flawed, and **"creates unnecessary emergencies by surprising pilots during critical, high-workload episodes."**



Geiselman and co-authors Christopher Johnson, David Buck, and Timothy Patrick examine many other design-level safety issues in the two-article series and offer solutions they say could be affordably implemented with available technology. The authors conclude that better design of automation technology on aircraft can prevent future accidents, and **more pilot training shouldn't be the only solution pursued by the industry**. The authors have combined expertise as pilots, flight instructors, **crew resource management instructors**, and **human factors** researchers. Their reports appeared in the July and October research annals published by The Human Factors and Ergonomics Society.

Accidents compromise mission success

For nearly 12 years, soldiers and civilians have deployed in support of Overseas Contingency Operations. As units ramp up for deployment, sustain operations and then redeploy, **there's an increased potential for accidents to happen**.

Serving as a task force aviation safety officer, Chief Warrant Officer 5 Bob Roebuck witnessed a lot during his unit's 14-month deployment in support of Operation Enduring Freedom. Roebuck, now an aviation accident investigator for the U.S. Army Combat Readiness/Safety Center, reflected on his time while serving as his unit's principal safety officer. "Deployment operations encompass a myriad of moving pieces and parts, literally," he said. "From personnel, equipment and supplies, when a unit deploys it's a massive logistical effort, and it's important that soldiers [don't abandon safety](#) while completing their missions. Safety is such a constant in soldier's lives, they sometimes become complacent."



Army safety professionals can be valuable assets in preparing an organization and its soldiers for deployment. They're trained to provide guidance and conduct training on various topics including, but not limited to, driver/crew training, deployment area fauna, hot and cold weather injury/illness prevention, food and water consumption, [fatigue](#), ammunition storage, weapons safety, radiation safety and laser injury prevention.

Historically, operating or riding in a military vehicle is one of the leading causes of serious on-duty injuries. "The likelihood of a preventable accident occurring is slim when personnel are licensed and trained on the equipment they'll operate and help load for a unit's movement," Roebuck said. "Soldiers [should also wear the appropriate personal protective equipment](#) when conducting rail, port or cargo-loading missions." During his deployment to Iraq, Maj. John Strain, an occupational health manager for the Georgia Army National Guard, and his unit's leaders saw firsthand the [effects of complacency](#) and worked tirelessly to educate their soldiers and mitigate preventable losses.

"I'm a firm believer that the only way for us to conduct operations in an acceptable risk environment is when soldiers properly perform pre-combat checks, leaders thoroughly conduct pre-combat inspections, and commands report and investigate even the most benign violation of safety standards," he said. "[Soldiers are human, and we make mistakes](#). However, if we don't learn from mistakes, we will pay with our life and the lives of our comrades." Historically, [not following set procedures and standards](#) are major factors in accidents that happen downrange.

“It’s important that everyone, not just leaders and safety professionals, reiterate the standards and never let them slip,” Roebuck said. “[When erosion of appropriate behaviors is tolerated](#), it becomes a practice and eventually a problem.” As units prepare to redeploy, Roebuck cautions soldiers against losing sight of the mission while they’re still in country.

“Mission first is the most important thing, always,” he said. “[‘Get-home-itis’](#) can get in the way and open the door for complacency and indiscipline. We (leaders) need to ensure that our Soldiers stay focused. Our unit used the CAVF methodology — coordinate, anticipate, verify and follow up — which served us well.”

Could the Secret to Increasing Safety be Eliminating Complacency?

According to an article from Forbes, going digital [may be the secret to increasing worker safety](#), as mobile technology company Mobideo has shown.

Mobideo provides [situational awareness of critical operations](#) in real-time to chemical, oil, gas, [aerospace](#), defense and other industries.

The company uses technology to harness system integration, business process management and enterprise content management.

According to the Forbes article, Mobideo focuses on a handful of key objectives when assisting their customers, which include increasing mobile access to information, [ensuring compliance with protocols](#), increasing visibility of activity status and building collaboration through information. Mobideo aims to save lives by providing managers [with real-time data](#) that can ensure their employees are working safely and correctly. By making things digital, time isn’t wasted on paper checklists, time-consuming complacency steps and other outdated systems for ensuring safety, [which are prone to errors](#). With real-time data, business owners can better maintain their safe workforce while also ensuring the correct protocol is being taken.



The digitized process increases safety not only through streamlined, more effective processes, but also through mobile apps that are easy-to-use and intuitive. Forbes gives the following example: if a user has to enter a measurement for tension and that entry is out of the normal range, information is captured in real-time and analytics then alert the user, notify the manager and allow for customized comments on the situation. Managers can also use the mobile platform to compare past performances to current ones and predict delays and bottlenecks.

<http://www.forbes.com/sites/sap/2013/10/02/mobileos-technology-increases-safety-by-eliminating-complacency/>

UPS pilots complained of fatigue before fatal crash

The two UPS pilots killed in a crash in Birmingham, Alabama, **complained** of fatigue just before the accident.

That's according to a report in the Wall Street Journal on the August 14 crash. The report says the cockpit voice recorder on UPS Flight 13-54 captured Captain Cerea Beal and first officer Shanda Fanning discussing **how tired they were while in flight**.



They also talked about how tiring they felt the UPS overnight schedule could be just before their predawn approach to Birmingham.

A UPS spokesman responded to the report saying scheduling was not a factor in the accident and that the company is compliant with FAA rules regarding crew schedules.

APS: Playing Sleep-Catch-up on the Weekends Does Not Resolve Sleep Deficits

The American Physiological Society recently announced even a [few days](#) of lost sleep over the course of a workweek can have adverse effects, including [increased daytime sleepiness](#), [worsened daytime performance](#), an increase in molecules that are a sign of inflammation in the body, and impaired blood sugar regulation. Though many people believe they can make up sleep lost during the workweek by sleeping more on the weekend, it's unknown whether this "recovery" sleep can adequately reverse these adverse effects.



In an effort to gauge the effectiveness (or lack thereof) of "[remedy sleep](#)," Alexandros N. Vgontzas of the Penn State University College of Medicine and his team of researchers placed 30 volunteers on a sleep schedule that mimicked a sleep-restricted workweek followed by a weekend with extra recovery sleep. At various points along this schedule, the researchers assessed the volunteers' health and performance using a variety of different tests.

The researchers found that the volunteers' sleepiness increased significantly after sleep restriction, but returned to baseline after recovery sleep. Levels of a molecule in blood that's a marker for the amount of inflammation present in the body increased significantly during sleep restriction, but returned to normal after recovery. Levels of a hormone that's a marker of stress didn't change during sleep restriction, but were significantly lower after recovery. However, the volunteers' [measures on a performance test](#) that assessed their ability to pay attention deteriorated significantly after sleep restriction and [did not improve after recovery](#). This last result suggests that recovery sleep over just a single weekend [may not](#) reverse all the effects of sleep lost during the workweek.

The study, entitled "[The Effects of Recovery Sleep After One Workweek of Mild Sleep Restriction on Interleukin-6 and Cortisol Secretion and Daytime Sleepiness and Performance](#)" appeared in the American Journal of Physiology-Endocrinology and Metabolism, published by the American Physiological Society.

Lithium Battery Fires in the Cabins of Commercial and General Aviation Aircraft

This new innovation counters the threat of on-board cabin fires caused by lithium batteries in personal electronic devices and supplements current FAA protocol.

SpectrumFX of Tulsa, Oklahoma has a new product designed specifically for the threat of Lithium battery fires in the cabin of commercial and corporate aircraft worldwide.

Marketed as the LIFE Kit, SpectrumFX utilizes Class A, B and D fire extinguishing agent, Firebane®.

This agent is the only aqueous based suppressant capable of extinguishing a reactive metal fire.

“This new innovation counters the threat of on-board cabin fires caused by lithium batteries and supplements current FAA protocol,” said Kent Faith, CEO of SpectrumFX. “Our biodegradable solution is environmentally safe and can eliminate the toughest reactive metal fires.”

With multiple applications in varied industries, SpectrumFX’s product works to reduce the risk of lithium battery fires without harm to the environment or to human life.

SpectrumFX has multiple developments planned for the next 5 years including aircraft cargo fire suppression and individually self-contained cargo containers that will offer fire detection and fire suppression.

SpectrumFX is the leader in “green” fire extinguishing technology and is working with both the FAA and ICAO agency guidelines as we address today’s complex fire safety challenges.

To find out more, please visit www.spectrumfx.net.





While the ASRS receives an average of 35 General Aviation fuel starvation and fuel exhaustion incident reports per year, the NTSB investigates a significantly higher number of accidents related to fuel management. The voluntary nature of ASRS reports accounts for some of the difference in the number of reports, but the higher NTSB numbers also highlight another point—the fact that fuel management errors often lead to significant aircraft damage and/or personal injury. By taking heed of the lessons in the following ASRS reports, Pilots can help reduce fuel management errors and avoid the often costly results.

“The Airport Was Beyond Glide Distance”

This PA-28 Instructor Pilot also encountered a Student Pilot whose fuel tank selection procedure was “off” the mark. Normally, switching to the tank with more fuel is a prudent step in preparing for landing. In this incident, however, selection of either tank would have been preferable to the OFF selection.

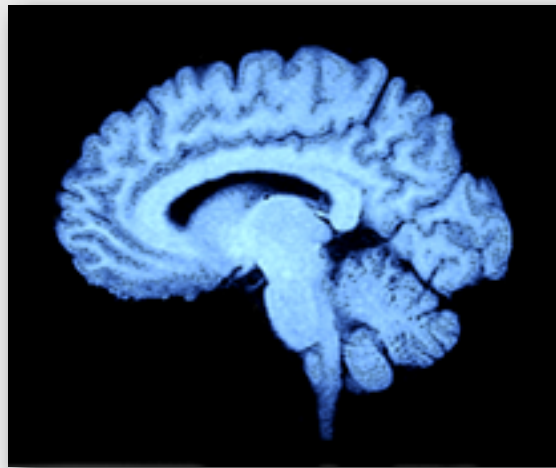
Lesson 2: *Know and follow Lesson 1.*

■ On the downwind, I instructed the Student to switch to the fullest tank. He switched from the left tank and went past the right tank position to OFF. The fuel selector valve had no detent to prevent being inadvertently switched to OFF. Engine power was lost and a decision to execute an off-airport landing was made as the airport was beyond glide distance for the aircraft. We executed an uneventful off-airport landing. I noted the fuel selector valve was in the OFF position after securing the aircraft. There was no attempt to restart on my part because of the lack of altitude.

The Student Pilot **was accustomed to a different Cherokee** that had a detent feature on the fuel selector that wasn't found in this model. **I was complacent** in believing that the student knew the fuel selector positions and should have verified that the selector valve was in the correct position.

Brain Differences Revealed Between 'Early Risers' and 'Night Owls'

According to a study published in New Scientist researchers from Aachen University in Germany believe approximately **10 percent** of the global population can be categorized as 'morning people,' while around **20 percent** are true night owls and find themselves staying up late without any effort. All remaining humans have relatively normal body clocks, which are determined by chronotypes. For the study, researchers used diffusion tensor imaging to scan the brains of 20 intermediate chronotypes, as well as 16 self-proclaimed early risers and 23 individuals who prefer later hours. The team found a reduction in the integrity of the chronotypes white matter in areas of the human brain associated with depression.



“We think this could be caused by the fact that late chronotypes suffer from this **permanent jet lag**,” said Jessica Rosenberg, head researcher for the study.

The team believes it could be possible that the gene variants responsible for pushing body clocks towards nocturnal living could affect the physical structure of the brain, although they are not sure if any changes impact on a person's health.

Other studies have found that those with nocturnal habits tend to consume more alcohol and tobacco than people with better-adjusted body clocks.

<http://www.newscientist.com/>

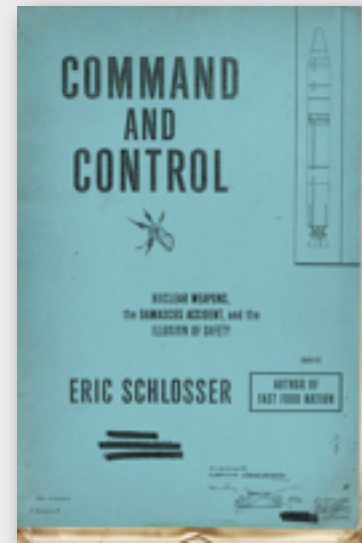
Command and Control

Nuclear Weapons, the Damascus Accident, and the Illusion of Safety

Famed investigative journalist Eric Schlosser digs deep to uncover secrets about the management of America's nuclear arsenal. [A ground-breaking account of accidents, near-misses](#), extraordinary heroism, and technological breakthroughs, *Command and Control* explores the dilemma that has existed since the dawn of the nuclear age: how do you deploy weapons of mass destruction without being destroyed by them? That question has never been resolved--and Schlosser reveals how the [combination of human fallibility and technological complexity](#) still poses a grave risk to mankind. Written with the vibrancy of a first-rate thriller, *Command and Control* interweaves the minute-by-minute [story of an accident at a nuclear missile silo](#)

in rural Arkansas with a historical narrative that spans more than fifty years. It depicts the urgent effort by American scientists, policymakers, and military officers to ensure that nuclear weapons can't be stolen, sabotaged, used without permission, or detonated inadvertently. Schlosser also looks at the Cold War from a new perspective, offering history from the ground up, telling the stories of bomber pilots, missile commanders, maintenance crews, and other ordinary servicemen who risked their lives to avert a nuclear holocaust. At the heart of the book lies the struggle, amid the rolling hills and small farms of Damascus, Arkansas, to prevent the explosion of a ballistic missile carrying the most powerful nuclear warhead ever built by the United States.

Drawing on recently declassified documents and interviews with men who designed and routinely handled nuclear weapons, *Command and Control* takes readers into a terrifying but fascinating world that, until now, has been largely hidden from view. Through the details of a single accident, Schlosser illustrates how an unlikely event can become unavoidable, [how small risks can have terrible consequences](#), and how the most brilliant minds in the nation can only provide us with an illusion of control. Audacious, gripping, and unforgettable, *Command and Control* is a tour de force of investigative journalism, an eye-opening look at the dangers of America's nuclear age.



Inspiration!

"Mistakes are always
forgivable, if one has the courage to
admit them."

-Bruce Lee



Here are 11 powerful life lessons from Bruce Lee:

1. **Goals**

"A goal is not always meant to be reached, it often serves simply as something to aim at."

2. **Flexibility**

The happiest people in the world are flexible. They do not have rigid beliefs or try to control and manipulate their surroundings to make them happy.

3. **Time**

Don't waste time, instead start boldly moving towards your dreams. You

will fail and make mistakes along the way, so stay humble and stay in the now.

4. Service

“Real living is living for others.”

5. Acceptance

“Take no thought of who is right or wrong or who is better than. Be not for or against.”

6. Single-Mindedness

“I fear not the man who has practiced 10,000 kicks once, but I fear the man who has practiced one kick 10,000 times.”

7. Creativity

You impose your own limitations. Even if a guru tells you that something is impossible doesn't mean it is. He or she is human just like you.

8. Simplicity

Simplify your life and eliminate the unnecessary. We as a society have been taught to consume and amass material possessions.

9. Find Your Path

In the beginning learn from someone you look up to, but as you get better and more successful, take what works and discard what doesn't.

10. Take Action

You can read all the information you want, but if you never take action, nothing will happen. You will almost never have crystal clear clarity, so you will have to work through confusion and uncertainty.

11. Ego

Everything you do involves your ego. It's the one that is afraid. It wants you to stay where things are comfortable, convenient and safe.