

From Kona to Kilimanjaro: Lessons Learned

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This article is about a form of neurosurgical postresidency depression: why it occurs more often than suspected, how I survived it, and some lessons I learned along the way. It is said that a smart man learns from his mistakes but a wise man learns from the mistakes of others. As a neurosurgeon in academia approaching the fourth quarter, I feel a responsibility to share what wisdom I have acquired along the way from past mistakes and triumphs with my younger colleagues in their second and third quarters.

Somewhat surprisingly, Abraham Lincoln, >150 years ago, characterized the modern world of academia when he said, “Men are greedy to publish the successes of their efforts, but meanly shy as to publishing their failures. Men are ruined by this one sided practice of concealment of plunders and failures.” Early in my career, I was motivated by great teachers to always ask “why?” and to constantly seek to improve existing methods of diagnosing and treating neurosurgical diseases. This resulted in many publications, presentations at national and international meetings, and a degree of recognition and professional success that became as addictive as any drug. However, I had no insight that the price of maintaining success in only one aspect of my life, my career, was to cost me dearly and result in a completely unbalanced life. Mihaly Csikszentmihalyi,¹ a psychologist and author of the phenomenal book *Flow: The Psychology of Optimal Experience*, summarized well the problem of success and balance in our society when he said, “Society applauds imbalance honoring us for self-sacrifice and awarding financial success. But these achievements are won at times at the cost of diminution of ‘self’ and personality. We are more useful to society when a small part of us is overdeveloped than we are whole people.”

I was oblivious to this observation when, after finishing my residency, I began to acquire all of the amulets of neurosurgical success: academic

titles, acknowledgement by my peers, societal recognition, and financial rewards. All deservedly earned, I believed, after decades of sacrifice and toil. Finally, I had “arrived.”

But then disaster struck. In the space of a week, my wife moved away with our 2 young children, my father died prematurely of a heart attack, and my depression was so severe I felt I could no longer safely perform surgery and realized I had to quit neurosurgery.

I experienced what one psychologist called a “supernova burnout.”³ This occurs when “successful” people experience despondency, depression, and anxiety on discovering the societal myth that success in our work is not transformative into other areas of our lives. Daniel Goleman,² author of *Emotional Intelligence*, summarized this well when he stated, “Academic intelligence has little to do with emotional life. The brightest among us can flounder on the shores of unbridled passions and unruly impulses. People with high IQ’s can be stunningly poor pilots of their private lives. Academic intelligence offers virtually no preparation for the turmoil or opportunity of life’s vicissitudes.”

Several years later, I realized in retrospect this scenario of burnout is not that unusual for neurosurgeons. In fact, Steven Berglas,³ a management consultant and authority on professional burnout, stated, “Virtually all high achievers” (certainly this includes neurosurgeons) “become imprisoned by their stellar careers for all of the ‘right reasons’—social approval, the desire to provide for family, the belief that staying the course is constructive.” He further states, “The snare set by golden handcuffs constricts slowly,” as I experienced.

Recalling the words of Lincoln, I indeed have been greedy to publish my successes and “meanly shy as to publishing” my failures. There is a Chinese saying, “If you fall 7 times, get up 8.” My hope is by publishing my story of failure, adversity, and lessons learned on how I “got up,” it may serve as a source of preventive medicine for my younger colleagues.

THE FALL

With no family, no job, and no self-esteem, at the age of 40 I moved in with my bereft and

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similarly depressed mother in the middle of winter in Wheeling, West Virginia. Bequeathed to her by my father was a dilapidated, debt-ridden truck stop. I had no choice but to help her with an exorbitant mortgage from his overborrowing. One day I was performing “miracle surgery” at the University of Pittsburgh (Figure 1), and virtually the next I was filling up 18 wheelers and flipping hamburgers at the Dallas Pike Truck Stop (Figure 2).

For several months, I barely subsisted. With my immune system incapacitated by depression, I contracted hepatitis A from contaminated truck stop food and felt near death. Self-destructive thoughts were frequent. Psychotropic drugs were of little benefit. I could see no light at the end of this very dark tunnel.

In the spring, a local banker friend who held the mortgage on the truck stop called and asked me to join him on a run. I think it was to determine whether I was ever going to be able to pay the bank debt. Regardless, 20 pounds overweight and short of breath with 1 flight of stairs, I begged off. But he insisted. Finally, I joined him at the local high school track after rummaging to find a pair of worn sneakers and old scrubs. After 4 painful laps I was dyspneic and exhausted. I said to myself, “Never again!” But that night a strange and insightful thing happened. For the first time in months, my intractable insomnia gave way to a deep, restful sleep. Connecting the dots the next day, I went to the track myself and ran 1.5 miles. The following day, it was 2 miles, and soon I was like Forrest Gump running through Wheeling, West Virginia.

Over the next few months, I found my depression lifting, my weight decreasing, and my aerobic conditioning improving. I serendipitously read an article on the new sport of triathlon and cross-training. Beginning to experience knee and ankle pain from

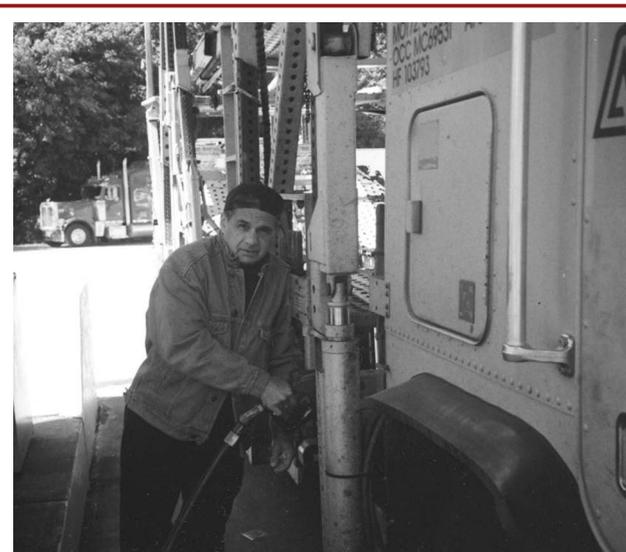


FIGURE 2. Dr Joseph Maroon filling up an 18 wheeler at Dallas Pike Truck Stop (Dr J. Maroon’s personal archives).

just running, I learned to swim at the local YMCA, bought a used bike, and began to cross-train. In the fall, I entered my first Tin Man triathlon, a 0.9-mile swim, 25-mile bike, and 10k run. On finishing—nearly last—I experienced the emotional high described by Csikszentmihalyi as the ultimate psychological experience. Another addiction was about to develop, but this time a very healthy one. Little did I ever dream where this road to health and fitness would take me. Around the same time, I felt strong enough to return to the university and neurosurgery, still somewhat apprehensive, but certainly much healthier and stronger than when I left.

LESSON 1

The Square: Formula for a Balanced Life

I had certainly read my share of self-help books during this period with advice to “face your fears,” “trust your feelings,” and “get in touch with your inner child.” But less than a month after I had recovered from hepatitis, I rediscovered a slim volume written by William Danforth, founder of the Ralston Purina Company, titled, *I Dare You*, on the shelf of my childhood bedroom. I received the book initially as a high school senior and a prize for leadership from the Danforth Foundation. When I opened the cover, I read the following introductory paragraph by Danforth:

This book is for the daring few who are headed somewhere. Those afraid to dare might as well pass it up. It will weary the lazy because it calls for immediate action. It will bore the sophisticated, and amuse the skeptics. It will not be overly popular because it calls for courage swift and daring. But in the eyes of you, one of the priceless

Maroon Leading Team In Miracle Surgery

By JEAN COLEMAN
News-Register Staff Writer
Surgical history with some of the aspects of science fiction is being made in Pittsburgh with a former Bridgeport resident taking a leading role.

Dr. Joseph C. Maroon, son of Charles and Anna Maroon of Bridgeport, has been a team leader since he played football at St. John's Central and at the University of Indiana where he was a “Scholastic All-American.” Now he is an associate professor and chief of neurosurgery at Presbyterian-University Hospital.

Utilizing a technique perfected by two University of Pittsburgh School of Medicine neurosurgeons in which brain tissue is lowered by nearly 40 degrees and salt water flows through the arteries instead of blood, Dr. Maroon recently successfully removed an “orange sized” aneurysm dangerously depressing the



DR. JOSEPH C. MAROON

brain of a 54 year old man. In a telephone interview with the News-Register, Dr. Maroon readily acknowledged the

“science fiction” tones of the surgery, but expressed high praise for his two colleagues who devised the life-saving technique. They are Dr. Robert G. Selker, head of the division of neurosurgery at Montefiore and member of the university hospital staff, and Dr. Sidney K. Wolfson, director of surgical research, University of Pittsburgh hospital, and head of the neurosurgical team.

Dr. Maroon has worked with the two doctors in four operations removing tumors. However, he was the operating surgeon in the recent precedent setting aneurysm removal.

The patient’s body was cooled, his heart was stopped, all of the blood washed from the brain, and “if a vein were cut literally ice water flowed,” Dr. Maroon said.

(Cont. on Page 6 Part I)

FIGURE 1. Newspaper clipping from 1980 describing Dr Joseph Maroon’s “miracle surgery” after performing an aneurysm removal under total blood exsanguination and profound hypothermia (Dr J. Maroon’s personal archives).

few, I trust will come a gleam of battle as you read on. You can be a bigger person and I am going to prove it to you.⁴

Danforth was also a man committed to good health, physical fitness, and spirituality. In fact, he asserted that a strong spiritual life helps to define a person’s purpose, and a spiritual foundation leads to happiness and fulfillment. He achieved what he considered a balanced life and wanted to share the joy he had found with others. He kept a visual reminder of that all-important balance in the form of a square he referred to as his “checker”: If the 4 sides of his square, which he labeled physical, mental, social, and religious, were all the same length and “in check,” he knew his life was shored up and stable (Figure 3).

At one point in his book, Danforth asked, “Suppose you were to draw a picture of your life as you were living it today. How near four square would it be?” So I followed Danforth’s instructions and tried to draw my square. Mine looked like this (Figure 4).

Staring at this bizarre representation of the choices I had made, I “got it” in both my brain and my gut. My work and my ego had dominated my life, to the absolute exclusion of everything else that had also deserved my attention, and I had no real awareness or insight into what had been happening to me. It was a sobering moment to recognize that my marked imbalance, so obviously represented by my feeble “square,” was at the root of my calamitous life. It was around this same time that the call from my friend came to “just take a run around the track.”

For the first time, I recognized that the dissolution of my marriage and family was in large part due to my overcommitment to my work. In addition, the spirituality that had been a major part of my upbringing with 12 years of schooling with Sisters of Charity had faded away. And the physical side of my square was virtually atrophic. Over the next several months and years, strategic decisions

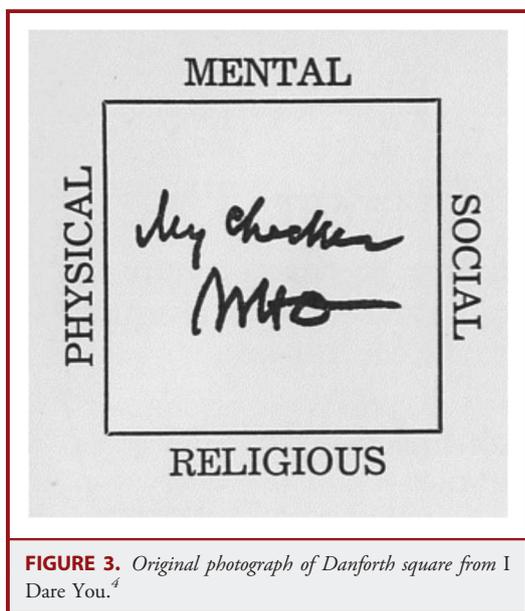


FIGURE 3. Original photograph of Danforth square from I Dare You.⁴

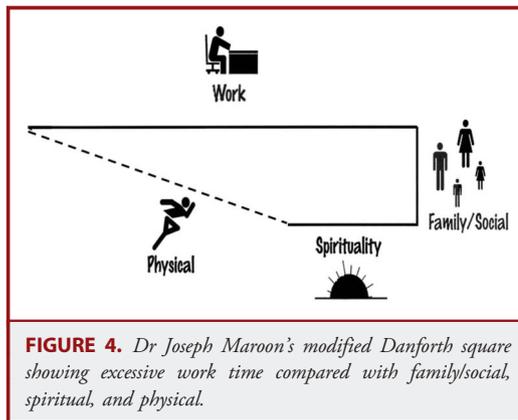


FIGURE 4. Dr. Joseph Maroon’s modified Danforth square showing excessive work time compared with family/social, spiritual, and physical.

were made in all 4 areas to balance my square, and in the words of Robert Frost,⁵ “This has made all the difference.” Lesson 1 then is to be aware and not lose insight, or as the Buddhists say, to be mindful or aware of the consequences of overcommitment, particularly in work, and to strive daily to maintain balance in life by “touching” not only work, which is a given, but also the family/ social, spiritual, and physical sides of the square.

LESSON 2

Adversity Is Our Best Teacher

Very few people will choose to learn by losing, failing, falling, or being humbled or humiliated. Unfortunately, we do not grow or advance in a straight line. There are always slips, falls, and sometimes total train wrecks. In these times, we are confronted with a choice, whether we like it or not, to somehow manage to “get up” or remain stuck in any number of sad and even tragic alternatives. Author Richard Rohr⁶ explained in his book *Falling Upward* that “falling down” is, in fact, moving upward and is the most resisted and counterintuitive of messages. He outlines how our failings can be the foundation for our ongoing spiritual growth. Jung said, “Where you stumble and fall there you find pure gold.” It took me 40 years to really learn this lesson.

One of my most simple and prized stories is that of a Chinese farmer and his son titled “Good Luck, Bad Luck Who Knows,” which I have shared with hundreds of my colleagues and friends (**Supplemental Digital Content 1**, <http://links.lww.com/NEU/A729>).

Lesson 2 then is to embrace adversity and be aware that, as St. Paul said, “When I am weak, then am I strong” (2 Corinthians 12:10).

LESSON 3

Nothing Worthwhile Comes Easy

In 1977, at an awards ceremony in Honolulu, a spirited argument broke out over which athletes were more fit: runners, swimmers, or cyclists. Present were participants who competed in the Waikiki Rough Water Swim Race, cyclists who raced around the island of Oahu, and those who had participated in the

Honolulu Marathon on an annual basis. US Navy Commander John Collins suggested that the debate be settled once and for all through a race that combined all 3 existing long-distance competitions already held on the island. The swim of 2.4 miles, the Around Oahu Bike Race of 115 miles (originally a 2-day event), and the Honolulu Marathon, 26.2 miles (Figure 5). “Whoever finishes first,” Collins said, “we’ll call him the ironman.”

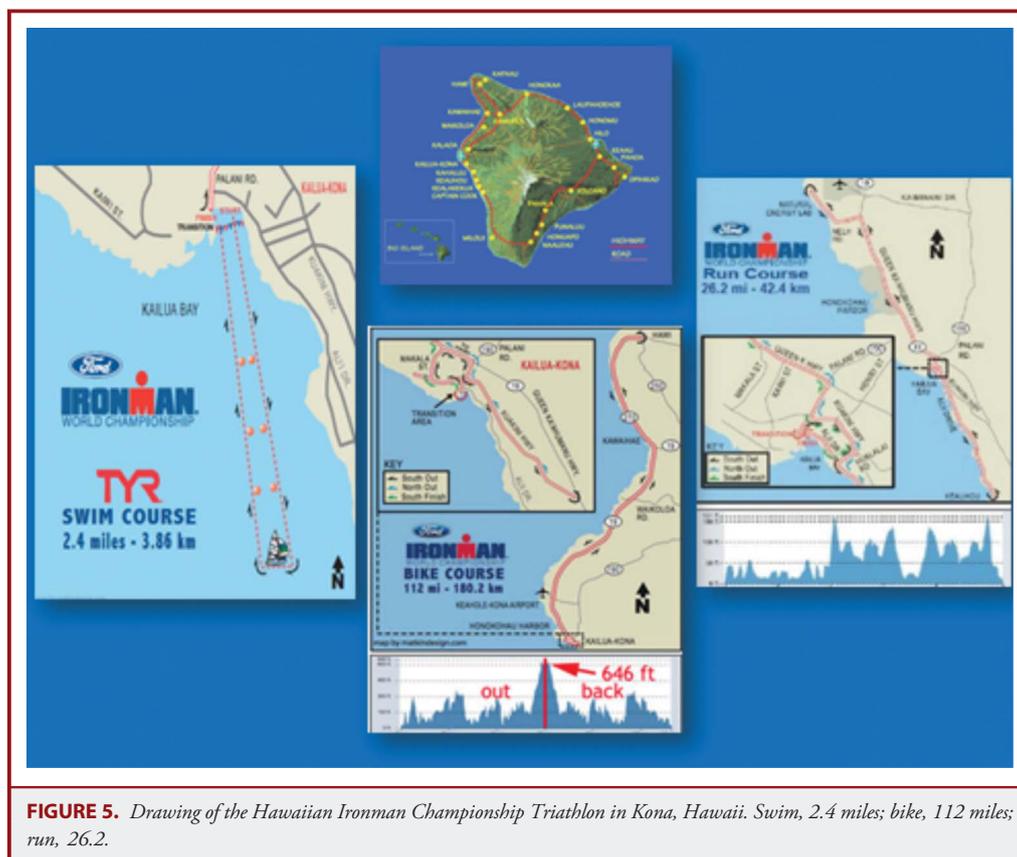
Thus was born the Ironman Triathlon, held annually now on the island of Hawaii in Kona, which serves as the world championship for the sport of triathlon.

When I stumbled exhausted 4 times around the track in Wheeling, West Virginia, and even when I finished my first Tin Man triathlon, there was never a glimmer of a thought that one day I would compete in this event, much less do it 5 times.

Just as in the art and craft of neurosurgery, small incremental steps are taken daily to reach the desired goal. Malcolm Gladwell⁷ in his book *The Outliers* writes about the 10000-hour rule. Essentially, he concludes it takes a minimum of 10000 hours of practice (and 10 years) to achieve the level of mastery associated with being a world-class expert in anything. Self-discipline, self-sacrifice, focus, commitment—and certainly a degree of obsessive compulsive personality—are required to become a neurosurgeon or any kind of accomplished athlete.

What completely eluded me was the powerful synergistic effect that physical activity had on my brain and the direct effect it had on my ability to perform neurosurgery. Innumerable studies now confirm that the neurochemical imbalances associated with depression are best mitigated and corrected by regular, consistent aerobic activity. A recent study by Agudelo and colleagues⁸ suggests that kynurenine metabolism in skeletal muscle actually mediates resilience to stress-induced behavior associated with psychiatric illnesses such as major depression. Exercise thus acts as a key therapeutic adjunct in the treatment of stress-related disorders by limiting the amounts of kynurenine that reaches the brain and by enhancing serotonin and dopamine release.

In addition to improving muscle strength, tone, flexibility, and overall fitness, exercise is one of the most effective ways to increase brain-derived neurotrophic factor. This mediates neurogenesis, synaptogenesis, and brain plasticity. Thus, the mind-body connection is not just “psychological.” The scientific discipline of psychoneuroimmunology defines the biological substrate of this interaction—and why I contracted hepatitis. Although accomplishment in the work and physical sides of our square does not come easily, the enhancement in the quality and productivity of our lives is worth the effort.



LESSON 4

It Is the Journey, Not the Finish

Often overlooked or ignored in our quest for any goal is to savor and enjoy the moment. Too often, we are off to the next case, the next race, the next project without experiencing the beauty of the moment.

With continued exposure to and experience with neurosurgical problems, I have become even more aware of and delighted by relieving someone's pain with a simple microdiscectomy or returning the gift of sight with a pituitary tumor removal. It is never routine and still brings immense joy after many years. I have learned to experience the same joy through a swim in a quiet lake, an early morning run on dew-covered trails, or a bike ride over backcountry roads. Aerobic activity greatly enhances all of our senses so that the sights, sounds, tastes, and tactile stimulation are all heightened.

Many years ago, David Kelly, in his Presidential Address to the American Association of Neurological Surgeons, shared the story titled "The Station," which summarizes this lesson better than I ever can^{9,10} (**Supplemental Digital Content 2**, <http://links.lww.com/NEU/A730>).

LESSON 5

Connect the Dots

In 2009, at mile 132 of the 142-mile Hawaiian Ironman Triathlon, I quit. I had 10 miles to go in the marathon out on the Queen K Highway. There were no lights. I was dehydrated, had total body aching, and was becoming mentally confused. Behind me I heard "click click, click click, click click." The sound kept getting closer and closer. I had no idea what this was until a hand touched me on the shoulder and a voice said, "Hey 277, you can't quit now; you're too close. Come on, follow me." He obviously had no idea how badly I was hurting and how I could hardly walk. Just then, a car came in the opposite direction and its headlights reflected off of the runner's carbon fiber and metal legs (Figure 6).

For a second, I saw he was a triple amputee with no legs and only one arm, saying, "Follow me." Somehow I did, and I indeed finished the race (Figure 7).

Just like I had absolutely no idea how a phone call from a local banker many years ago would help me regain my mental and physical health and return to neurosurgery, I had no idea where this pat on the shoulder for 10 to 15 seconds in the darkened lava fields of Kona would take me 3 years later.

In the summer of 2013, my now friend, Rajesh Durbal, the first triple amputee to ever finish an Ironman Triathlon, called and asked me to join him and his friends on a hike. He then explained that it was to climb Mt Kilimanjaro, the highest free-standing mountain peak in the world, with 6 differently enabled—not disabled—athletes. Four were single-leg amputees, one had no arms, and Rajesh was a triple amputee. In February 2014, along with my 18-year-old daughter, Isabella, we summited the mountain to 19333 ft (Figure 8).



FIGURE 6. Rajesh Durbal, first triple amputee to finish the Hawaiian Ironman Championship Triathlon in Kona, Hawaii (provided by Rajesh Durbal).

So often in our lives we fail to "connect the dots." As a medical student, I vividly recall the examination by the chief neurosurgical resident of a patient with bitemporal hemianopsia and a pituitary tumor. I was absolutely amazed by how he could make the diagnosis of such a lesion by simply asking the man to look at his nose and wiggling 2 fingers in the periphery, which obviously the patient could not see. This had such an impact that I subsequently decided to make neurosurgery my lifelong passion. Life becomes so much richer when we finally learn how to "connect the dots."

LESSON 6

Do Not Quit

Neurosurgery, in some respects, is a one-on-one contact sport. It involves the transfer of energy in the form of concentration, focus, manual skills, and perseverance at times in the face of adversity to accomplish the goal of a successful operation. That is



FIGURE 7. Dr Joseph Maroon finishing the Hawaiian Ironman Championship Triathlon in Kona, Hawaii in 2013 (Dr J. Maroon's personal archives).



FIGURE 8. Dr Joseph Maroon and daughter Isabella Maroon summitting Mt Kilimanjaro, Kenya, at 19333 ft (Dr J. Maroon's personal archives).

with the same lesson: never quit (**Supplemental Digital Content 3**, <http://links.lww.com/NEU/A731>).

LESSON 7

Be Humble in Victory and Learn From Defeat

The satisfaction and gratification of deftly and successfully completing an operation can be immense. Through long training and the development of technical skills, neurosurgeons, like surgeons in other fields, have acquired the ability to markedly affect quality of life and even life itself. The obliteration of an aneurysm, the removal of a tumor or an arteriovenous malformation or disk, the reconstruction of a child's skull, the ability to restore sight and literally make the blind see and to restore movement and allow them to lame walk. In his book, Csikszentmihalyi wrote, "The greatest moments of our lives occur when our mind or our body is stretched to its limits in the voluntary pursuit of something difficult and worthwhile."¹ Neurosurgeons have this opportunity almost daily.

Associated with these accomplishments, however, is the natural inclination to be proud of one's work and accomplishments. However, this pride, unchecked, easily leads to hubris and arrogance, deadly sins in any physician.

Hubris, in ancient Greek, referred to extreme pride or self-confidence. In modern use, it denotes overconfident pride and arrogance and is associated with a lack of humility. Hubris also often implies that suffering or punishment will follow. For example, "Pride goeth before destruction and a haughty spirit before a fall" (Proverbs 16:18) sums up the modern use of hubris.

The story of Icarus from ancient Greek mythology symbolizes the consequences of hubris. Before escaping from the labyrinthine prison

why we feel so depleted and fatigued after a difficult procedure. As in life, however, all does not always go well. There is the aneurysm that bursts just as the clip is approaching the neck; the deep tumor that hemorrhages uncontrollably; the traumatically injured brain that swells fungus-like out of the skull; the durotomy and subsequent prolapse of the cauda equina that must be repaired; and on and on. The initial feeling of most is, "Oh my God, I wish I weren't here" and "Could someone else take over?" But our training and our sense of responsibility to the patient do not permit the word "quit." We must always persevere in such circumstances.

In 1982, Julie Moss competed in the Hawaiian Ironman as part of her research for her exercise physiology thesis. Approximately 2 miles before the finish line, she became severely dehydrated. She was leading the race but staggered, fell, and became confused, disoriented, and incontinent. She managed, however, to crawl 100 yd toward the finish line and was passed only moments before by her competitor. Her struggle to finish the Ironman was broadcast around the world and since has provided inspiration to many to compete in Ironman events. Like the training of a neurosurgeon, her own self-discipline, sacrifice, and perseverance imbued her



FIGURE 9. *Icarus* drawing by Maroon.¹¹ Reproduced from *Icarus to Aequanimitas*.

on the island of Crete, Daedalus cautioned his son, Icarus. With wings made of feathers and wax, he warned him not to fly too high when he experienced flight and soar through the sky like the birds¹¹ (Figure 9).

Not heeding his father's words, he flew higher and higher until too near the sun; the wax melted, and he plummeted to his death in the sea near the island still called Ikarus.

The morbidity and mortality conferences euphemistically referred to as patient care conferences are, for many, an effective way to guard against hubris. The causes of complications are often broken down into 4 areas: an error in judgment, an error in technique, the patient's disease, or trying to play God. The margin of error in the central nervous system is so small that no neurosurgeon has escaped these complications—or has not struggled at times to avoid hubris.

I have been very fortunate in my career to be associated with 3 Super Bowl coaches: Coach Charles Noll, Coach Bill Cowher, and Coach Mike Tomlin. After all games, with the players down on one knee in the locker room, each coach had nearly the same mantra whether the

game was won or lost. “Be humble in victory and learn from defeat.” No truer words have been said for neurosurgeons as well.

CONCLUSION

The final metric of success is the difference we make in the lives of others. But that is contingent on our own physical and mental health. *Mens sana en corporare sano* (a healthy mind in a healthy body), as the Romans pursued. I have summarized some of the more important mental and physical lessons I have learned during a career in neurosurgery. None are that profound or unique, except as experienced by me. My hope is that they will help others navigate between the Scylla of complications in our work and the Charybdis that pulls us off course in our personal lives to acquire that balance that leads to overall contentment in our lives.

Finally, to summarize the lessons learned:

1. Adversity is our best teacher.
2. Nothing worthwhile comes easy.
3. It is the journey, not the finish.
4. Connect the dots.
5. Never quit.
6. Be humble in victory and learn from defeat.

And finally, *carpe diem*.

Disclosures

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