

# MUSCULOSKELETAL MATTERS

FALL 2023



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## KICKOFF

NATHANAEL CAMICK

I ran out onto the field to start the game. I paused to take in the roar of the largest crowd I had ever played for and the band's resounding fanfare. After being overlooked my whole athletic career, I was finally being recognized as an All-Star in front of the whole county on this January night that would change my life.

During the game, I was walking down the sideline when my name pierced through the noise. "Camick! We need you on the field for kickoff!" the coach's voice thundered. I made my way down the field, taking my place at the 20-yard line. While the average football play lasts about four seconds, kickoffs take longer; the longer the play, the more unbridled, brutish chaos ensues.

As the kicker's foot hammered the ball, 11 seconds of entropy was unleashed, irreversibly starting the 11 seconds that would change the trajectory of my life. I sprinted down the field, anchoring my feet in the ground to stop my opponent. But something was not right. As the uncontrolled force of another player's body struck my planted ankle, I started falling backwards in what felt like slow motion.

I could feel my right lower leg starting to bend. And bend. And bend for an eternity before I finally hit the turf. Then, my only view through the bars of my helmet were the Friday night lights against the Friday night sky. There was no pain, only shock, as I tried to wrap my brain around what just happened. I yelled out in despair as my athletic career came to a screeching halt.

As the play ended and the dust settled, I could feel the thousands of eyes from the crowd shift their laser focus onto me. Me, the wide receiver supposed to play at Johns Hopkins in the fall, was now frozen on the turf, attempting to hold my fractured leg together.

After thirty minutes on the ground, a pity clap from the crowd surrounded me as I was wheeled away on

a stretcher. The ambulance ride seemed to never end, but eventually I arrived at the local emergency department with my parents. The pain was intense, but manageable; I was trying to stay positive. This got harder as a full hour passed before any hospital staff came into my room.

Finally, someone came to take x-rays of my leg. I thought pain relief was coming. Instead, the worst pain I have ever felt engulfed my leg and my entire body when they moved my unsupported ankle for the x-ray. Some time later, the emergency medicine physician entered the room, stumbling into a firestorm of frustration as my parents unleashed their anger about my subpar care.

"He hasn't gotten any pain medicine?" the doctor questioned, shocked. His face changed from amicable to distressed as he realized someone had dropped the ball. He then stormed out of the room, returning with morphine for my pain. Despite this, my trust in him had been lost. The situation only worsened when he returned an hour later to notify me and my family that I would have to spend the weekend at home with a leg in two pieces because there was no space in the hospital. Dejected, I went home and hobbled onto the couch, where I would stay for the next two days.

I had a lot of time to think during my two-day house arrest. After all, I couldn't sleep with the pain and couldn't move very far from the couch. My mind was held hostage by what had happened at the hospital. My first true interaction with the medical field was fraught with pain, disarray, and disappointment. Was that really what the hospital was like all the time? Would I ever get better?

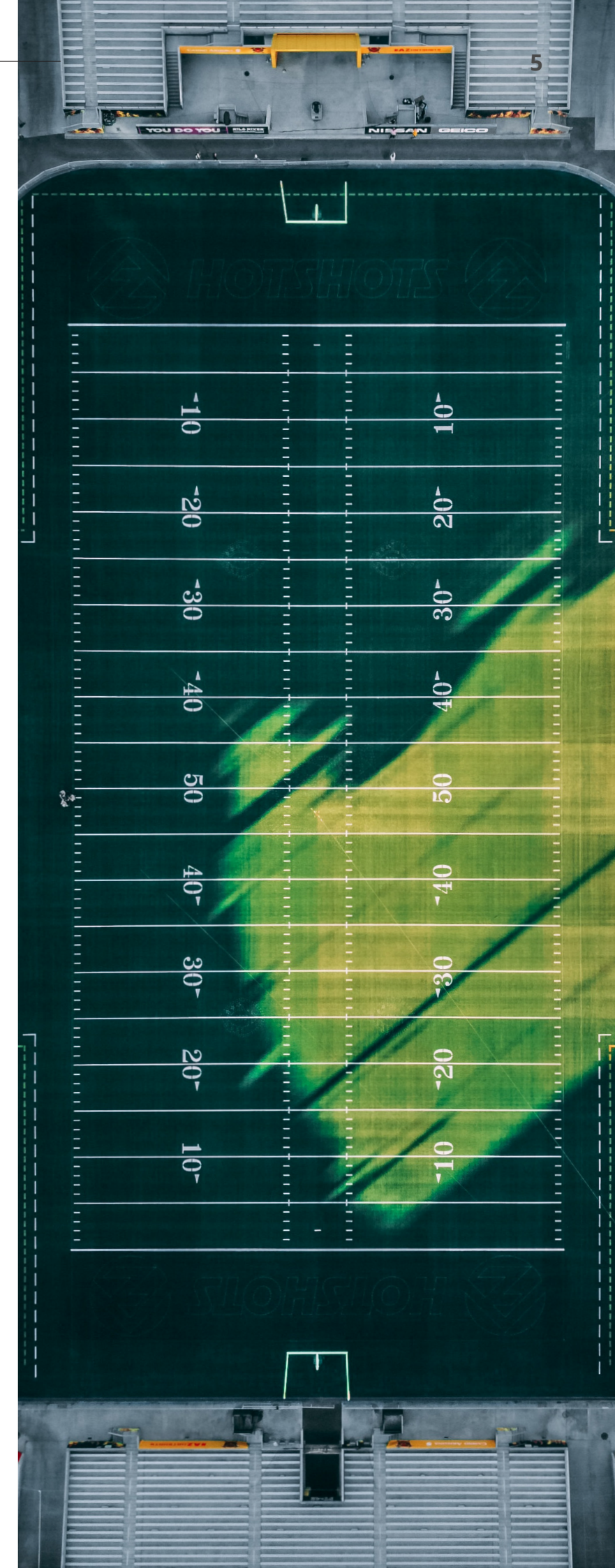
On Monday morning, we drove an hour to Orlando and learned that the hospital experience could, in fact, be much better. My parents wheeled me and my floppy leg into the orthopedic clinic of a new hospital.

When the surgeon opened the door and saw me in my current state of discomfort and desperation, he was shocked. He patiently listened to my story in disbelief; he could not fathom how little pain medication I received and the overall delay in my treatment. The surgeon asserted he would be there for me and help me get to recovery. Surgery was scheduled that afternoon. I finally believed I would get better.

As I passed through this arduous experience, I realized what medicine should and should not be. Physicians should communicate with their care team and listen to their patients' concerns. They should not have disjointed treatment approaches, nor should they turn away patients in their time of need. Empathizing with and empowering patients at their most vulnerable is key to being an outstanding physician.

My experience of poor communication and lack of initial support as a patient is what compelled me to pursue medicine. As an aspiring emergency medicine physician, I want to ensure similar situations don't happen under my watch. To prevent these situations, I will always prioritize listening to my patients and supporting them in their time of need.

Although I may never run onto a field amidst the fanfare and Friday night lights again, I will empower others and brighten their lives with my commitment to their care. Although one career ended, another was kicked off.



## FINDING SERENITY AMONG CHAOS: AN EXPLORATION OF THE MENTAL AND PHYSICAL BENEFITS OF YOGA

KELLY LONG

In our fast-paced, stress-filled lives, finding a sanctuary for both the mind and body is invaluable. Yoga has risen to prominence globally for its remarkable ability to foster comprehensive well-being. Beyond its reputation as a great form of exercise, yoga offers a myriad of benefits that nurture both mental and physical health.

In a world brimming with constant demands and pressures, stress can become an unwelcome companion. Yoga provides an opportunity to counteract that. Through mindful breathing, meditation, and a series of thoughtful movements, it encourages relaxation and reduces stress. Research has demonstrated that regular yoga practice significantly decreases stress,<sup>1-3</sup> allowing individuals to find serenity in the midst of chaos.

Practicing yoga has also been shown to help alleviate symptoms of anxiety, depression, and other mental health conditions<sup>3</sup>. It offers a holistic approach to well-being, fostering emotional resilience and balance. By emphasizing inner reflection, yoga can provide a foundation for emotional growth and stability.

Yoga is renowned for its capacity to increase flexibility, strength, and balance. Through a series of poses and stretches, it gently and gradually improves joint and muscle flexibility. Regardless of age or fitness level, yoga can help individuals rediscover their body's natural range of motion. Holding various poses challenges different muscle groups, helping to tone and strengthen the body. Additionally, balancing poses improve stability, both physically and mentally. Regular practice cultivates a

sense of steadiness and grace that extends beyond the mat into daily life.

For those grappling with chronic pain, yoga offers a non-invasive approach to pain management. It emphasizes proper alignment, posture, and body awareness, allowing individuals to take control of their pain. Yoga has been established as an effective means of reducing pain associated with conditions like lower back pain, arthritis, and migraines<sup>4-6</sup>.

Yoga's benefits extend to cardiovascular health as well. The combination of controlled breathing and gentle movement can reduce blood pressure and improve overall heart health<sup>7,8</sup>. It is an integrated technique that not only enhances physical fitness but also nourishes the heart and circulatory system.

Incorporating yoga into your routine doesn't require a complete lifestyle overhaul. It's a versatile practice that can be adapted to suit various needs and schedules. Whether it's a brief daily session or a weekly class, the benefits of yoga can be experienced by individuals of all ages and fitness levels.

Yoga is a powerful practice that offers an all-inclusive approach to wellness, nurturing both the mind and body. From stress relief and emotional balance to improved flexibility and strength, yoga has the potential to transform lives. As a person steps onto the mat, they embark on a journey of self-discovery and well-being. Yoga isn't just about striking a pose; it's about discovering balance, harmony, and wellness in a hectic world.

## MENTORSHIP AND LEADERSHIP IN ORTHOPEDIC SURGERY

KATIE LEE

As the landscape of medical education is changing shape, there has been a rising emphasis on the development of one's professional identity. There is no doubt that every medical student has life-changing experiences on their journey, many of which put themselves in the position of a mentee or a mentor. The skills of how to be a strong leader, how to communicate effectively, and how to manage conflict are just a few examples of "hidden curriculum" competencies that are making their way into the classroom with the intent to be structured and applicable. "Hidden curriculum" is a term used to describe messages that are publicized as important but are not supported with formal educational structures and resources<sup>1</sup>. Many schools have implemented programs that go by a variety of names, including coaching, interest groups, advising, etc<sup>2</sup>. By and large, people share that they have been inspired by, and collaborated with, great mentors that came before them through these mentorship programs.

Dr. Michelle Caird is a pediatric orthopedic surgeon by training and is the current orthopedic surgery department chair at the University of Michigan Medical School, where she proudly completed her undergraduate and medical degrees. Dr. Caird completed her internship and residency in orthopedic surgery at the University of Michigan, and fellowship training in pediatric orthopedic surgery at the Children's Hospital of Philadelphia. She shares below how mentorship has shaped her journey to medicine and how she participates in mentorship even today.

### What role did mentorship play in the early years of your medical career?

MC: "In school, they paired us up...where you would go and follow somebody and try to write a history and physical. (This) was through placements that the school intentionally did. It was a way to practice. And so I got paired with a pediatric neurosurgeon, and that was, like, amazing to me. That lady was one of the very few female pediatric neurosurgeons in the country. And one lady who was a pediatric orthopedic surgeon. She was outrageously funny, and she was a great mentor."

### What "hidden curriculum" did you learn as a medical student?

MC: "You know, at that time, they didn't have any direct leadership curriculum. Now I think there's a lot more, or there are more opportunities to think of things that way. But at the same time, the people that I shadowed, (the female neurosurgeon became the first woman chair of any neurosurgery department anywhere)... I feel like there were some really important leadership things I was picking up."

### Although you have shifted into more of a mentor role now, what are some ways you are still participating in mentorship?

MC: "When I was early in my residency, I tried to

work with leaders in the department to learn more of what they did."

"It was really important to have mentors both inside and outside my field that had a different perspective on things. Even mentors from different places, like my fellowship. Not just in orthopedics, but for me, working with women that had been very successful in pediatric anesthesia, neurosurgery, etc."

"I was able to participate in some formal leadership courses through the American Academy of Orthopedic Surgeons, some at my own institution, and I always try to take advantage of the opportunity when it's given."

### What ways are you acting as a mentor for others now?

MC: "As a previous residency director, I set up a leadership curriculum for the residents and that involved hands-on projects as well as bringing in speakers. You know, things like why it's so important to be a leader as a surgeon, as a physician. It was to find their leadership potential. As a mentor, my goal is to never say no to any student that wants to talk a little bit more or understand more about orthopedics, so I do that all the time. I have people shadow me all the time, whenever."



## PERSPECTIVES AND EXPERIENCES OF WOMEN IN SURGICAL RESIDENCIES

CATHERINE FALKENSTEIN, ERIN WELBY, KEERTHANA SENTHIL, KHADIJA KHAN

It is no secret that there has been a long history of gender disparities in medicine, particularly in the surgical field. In 2019 the AMA reported that, despite active efforts to improve the representation of women in medicine, only 36% of active physicians in the United States were women. Representation of women in surgery by specialty in 2019 was 22% in general surgery, 17% in plastic surgery, 15% in vascular surgery, 9% in neurosurgery, 8% in thoracic surgery, and 6% in orthopedic surgery<sup>1</sup>. Women continue to make tremendous efforts towards equal representation in medicine, as well as surgery, but inequality remains. Female physicians are continually paid less than their male counterparts for the same job with the same responsibilities<sup>2,3,4,5</sup>. It has also been shown that women have fewer leadership roles in medicine and are more likely to be passed over for tenure at academic institutions<sup>6</sup>. Despite these troubling statistics, women continue to make amazing progress. Between 2014 and 2021, all nine surgical subspecialties saw steady increases in female surgeons<sup>7</sup>. The most notable rises in representation were in general surgery, which rose from 14% to 21%, and orthopedic surgery (in number of trainees), which rose from 9% to 19%<sup>8</sup>. Let these numbers be a reassurance to every woman pursuing a career in surgery and a sign that in the next few years women might begin to dominate surgical subspecialties. We would like to now amplify the voices of some of the amazing women in surgery here at Geisinger: Dr. Erin Dickey, Dr. Summre Blakely, Dr. Katie Nealon, Dr. Priscilla Pichardo, Dr. Jasmine Kashkoush, Dr. Emma Dahmus, Dr. Rebekah Keller, and Dr. Danielle Skrzypek. We asked them to describe their own experiences in a male-dominated field and how medicine is making strides towards a future of equality.



### Are there any misconceptions you've noticed about being a woman in surgery?

Multiple women voiced that “patients think I am the nurse, even after introducing myself as a doctor.” One of our surgeons brought up the false belief that women “are not physically strong enough to be surgeons.” The same surgeon also reported misconceptions surrounding gender roles conflicting with career aspirations. She encountered limiting attitudes such as the view that women “cannot be good orthopedic surgeons and mothers at the same time.”

Other surgeons noted that women in surgery are often perceived as “mean and aggressive” and are frequently not afforded the same respect as their male counterparts. Instead of being disheartened, our physicians have worked hard to defy these expectations by excelling in their respective surgical fields. As more females saturate the field of surgery, though, these attitudes are slowly evolving.

### Did anything surprise you about entering the field of surgery as a woman?

“I have seen a shift from surgery being a ‘boys club’ to acceptance and excitement that women are pursuing surgery,” stated a general surgery resident. While it is a great time to be a woman in surgery, our residents also talked about how they felt they needed to “be more than a good surgeon and clinician.” Some of our female surgeons admitted that they felt their “appearance, demeanor, emotions, and behaviors to be evaluated more than their male counterparts.” From the collective responses of our women in surgery, we gathered the common theme of working hard to defy expectations. It seems that in this way female surgeons tend to provide a different outlook on a patient that is beneficial to their care. Our residents also threw in a word of caution to remember that life will keep evolving outside of your medical career, so “be prepared to do what you need to do to create your own life outside of residency.”

### What is your favorite part of being a woman in surgery?

“If you are a great female surgeon, everyone fears/respects you. You have so much say and power,” stated a general surgery resident. Our women in surgery loved shattering stereotypes and bonding with other women all while “being girly and wearing pink”.

One of the residents even talked about how she loves challenging people’s mental prototypes of what a surgeon looks like. “As a young blonde, it’s great to surprise people who undermine my intellect or ambition by letting them know I’m a surgical resident,” stated another resident. From their collective responses, it’s clear that our female surgeons love doing what they do every day, all while breaking boundaries and defying expectations.

As previously stated, the representation of women in surgery is steadily increasing. This is important for patients because it has been shown that patients treated by female surgeons have a lower risk of long-term adverse postoperative outcomes<sup>4</sup>. This includes hospital readmission, complication, and, most notably, death. The same study found these results to be consistent in nearly all subspecialties. It is imperative that women continue to be encouraged to pursue surgery if that is the path they choose. The female residents mentioned here represent a growing population, which should inspire and encourage both patients and surgeons alike to pursue the growth of a diverse operating room. Increased representation of women will ultimately improve patient outcomes, which is always the goal in healthcare. Improving the experience of women as they choose to pursue medicine, when they decide to become surgeons, and as they enter the operating room, will be crucial if we hope to continue the upward trend in the representation of women in surgery.

## FINDING COMMUNITY IN SPORTS

MAYA VAN GIESON

Finding community is something sought by all humans. We enjoy spending our time with others and engaging in activities we enjoy. Many Geisinger Commonwealth School of Medicine (GCSOM) students find community by joining organizations they are interested in. Two students decided to join sports-related organizations due to their passion for sports and the added benefit of maintaining their health. Third-year students Richard Callum (RC) and Garrett Alexander II (GA) expand on their experience as part of the GCSOM Soccer Club and GCSOM Basketball Club, respectively.

### Q: Can you describe your involvement with the soccer team?

RC: The GCSOM Soccer Club consists of current GCSOM students from all classes. We play at Riverfront in Scranton. There are adult leagues year-round (it's an indoor facility, so rain or snow we can still play), and depending on the season, the club has two to three teams participate a season. The games are Monday nights and are an hour long. This is my third year being a part of this club. My MS2 year I had the honor of being Co-President of the club alongside Anna Bondonese. Duties involved collecting dues for season fees, registering teams, and organizing game times for the individual GCSOM teams.

GA: I am the former Vice-President of the GCSOM Basketball Club and play 2-3 hours a week, once or twice per week. I have been part of the GCSOM Basketball Club since Fall of 2021, when I started as a medical student.

### Q: What have you enjoyed the most about participating?

RC: The thing I enjoy most from this organization is the stress relief it brings. As medical students, we are constantly studying and learning, and it is difficult to find physical activity. This club offers students the opportunity to run around for an hour and get some healthy physical activity in.

GA: What I have enjoyed the most about playing basketball is the camaraderie that I have been able to form with other medical students on the team. It has allowed me to strengthen my relationship with my classmates but also build relationships with the underclassman that I would not have been able to establish if it were not for basketball. In addition, medical school can be highly stressful, and being part of

the basketball club allows me and other students to escape from the abundant stressors that come with being a medical student and destress. Another amazing benefit of being part of the basketball club is that it is a fun and engaging way to incorporate exercise into my day, which has physical and mental benefits for my overall health.



### Q: Do you feel this creates a sense of community for you? If so, in what way(s)?

RC: The GCSOM soccer club creates friendships within your class as well as across classes. Some of my closest mates are fellow peers I play in the league with on Monday night. With the hectic schedules of being a medical student, it can be difficult making plans, so soccer on Monday is a staple to myself and a lot of classmates. The M1 v M2 game is always an exciting matchup between the younger classes.

GA: I do believe that being part of the basketball club helps build a sense of community as we all have a shared passion for basketball, which can be a strong bonding factor and a great conversation starter to deepen the relationship with my peers. Furthermore, basketball is a team sport, and working together on the court fosters a strong sense of trust between players, which can extend off the court, helping members support one another in other aspects of their lives. Additionally, being part of the basketball team allows the members to create goals and work together to create a shared sense of accomplishment.

### Q: In what ways do you feel like being involved benefits you?

RC: Wellness. I believe movement encourages more movement. If I ever find myself in a rut, physical activity seems to be a perfect mental break that gives me energy to continue with my studies. Being from Florida, this can prove difficult in the dreary winter months that seem to never end, so having soccer every Monday, regardless of weather, is huge for morale. Also, it gets me out of the house.

GA: A great benefit of being part of the basketball club is the supportive community you form, which can provide emotional support, whether it's academic struggles, personal issues, or career-related concerns. Also, being part of the club allows me to take a mental health break and spend time do something I love and participate in something that has always been an integral part of my life and my identity.

### Q: As third-year medical students, how have and do you balance sports involvement and academic requirements? Any advice?

RC: It's tough. Depending on the clinical rotation you're on, I'm not gonna lie; it's tough. Making it a priority to go to soccer after a long day of standing during surgery is not easy. However, I feel that you need to go. I always feel better after playing soccer with my colleagues. At the end of the day, I remind myself that an hour of soccer a week will not prevent me from getting my MD. I'd even argue it continues to give me the energy to trudge on. Third year has taught me that you need to actively schedule your breaks outside of your studies to allot time to relax.

GA: As a third-year medical student, I have balanced sports involvement and academic requirements by first understanding that as a medical student, my number priority school. From there, I can come up with a schedule that allows me to keep up with my lectures, clinical requirements, and created dedicated study time for myself. Also, my games for the basketball league are scheduled for specific times every week, which allows me to construct a schedule around my school hours to ensure that I can enjoy playing basketball and manage my school responsibilities as well.

### Q: Is there anything else you want to add?

RC: Join the GCSOM soccer Instagram founded by our own Alden Mileto. @regniseig\_soccer

GA: Being part of the basketball club has allowed me to build everlasting relationships that will be a crucial part of my life and my career in medicine. My relationships with my classmates have grown so much as we went through the struggles of going winless in our first season to almost making the championship in the second season as the last seed in the playoffs after beating the number one seed in overtime by 3 points to almost making it to the championship game after losing in double overtime by 1 point in the semifinals. The teamwork skills and trust that we fostered throughout the season allowed us to find our identity as a team and see what we do best. That growth is what allowed me to build camaraderie with my peers, which has fostered a collaborative environment that has allowed everyone to succeed not only on the court but in other aspects of our lives as well.

While everyone has their own niche, the sports community is clearly one where multiple GCSOM students find a sense of camaraderie. Sports and other forms of physical activity unite people together during games and practices, but these relationships often extend beyond the court. As noted by these students, not only does it benefit their physical and social health, but their mental health too. By scheduling in physical activity, it gives their mind a break from academics and clinical learning and provides stress relief. GCSOM offers multiple ways to get active and find community. Be sure to check out the Basketball Club, Soccer Club, Yoga Club, Ski & Snowboard Club, Kickboxing Club, Running Club, and other various offerings in the area!



## FROM THE MAT TO MEDICINE: HOW JIU JITSU SHAPES FUTURE PHYSICIANS

RIA SEBASTIAN, THEODORE LAINIOTIS

It was the beginning of our M1 year and we were looking for a stress outlet. We stumbled upon the gym of Master Toco, a black belt who grew up in Brazil and trained under one of the original teachers of jiu-jitsu. When we learned of his impressive lineage, we expected a cut-throat, competition-heavy gym that might cause more stress than relieve it. Instead, we found a community that emphasized health, physical and mental discipline, and respect for your training partners as a way to become a better athlete and overall person. We were not expecting to learn so much about medicine from martial arts within this past year.

Jiu-jitsu requires the strength of almost every muscle group, differentiating it from most sports we played growing up. While some positions are more advantageous with strong quads, others require a tight grip and enough upper arm strength to escape a threatening position. As we continued training, we could feel the once-underused muscle groups getting sore but also subsequently stronger.

The first few weeks were physically and mentally taxing. While we were once competitive athletes, we had never participated in a sport that required this specific type of conditioning. Our bodies had to adapt quickly to the style of fighting we were learning. We lacked the skill to beat most, and admittedly, it could be demoralizing to lose match after match. Even so, we strangely found ourselves more eager to roll again, to fix a mistake, and to try a new move. There was an urge to execute a submission right and only practice would make it perfect.

Master Toco often pulls us aside to remind us, "Poco y poco. Rice and beans." At first, we would look at each other confused. But slowly, these catchphrases became a valuable lesson in composure and problem-solving. Master Toco teaches us to stay calm and stick to the basics, equating foundational moves to a dish of rice and beans: a basic but essential to Brazilian cuisine. Jiu-jitsu cannot be learned in a day so we take each move we know and slowly build on it, "poco y poco" or "little by little".

In matches when you are losing it is crucial to stay calm and take a deep breath. In doing so, you are more likely to find your opponent's mistakes. While this advice was extremely helpful in the patience of learning jiu-jitsu, we found that these lessons translate almost seamlessly into our medical education.

Jiu-jitsu emphasizes problem-solving, strategy, and adaptability. These skills are prevalent in the medical field, where quick thinking and the ability to assess and respond to dynamic situations are essential. The discipline required in jiu-jitsu can also contribute to a focused and composed mindset, which is crucial for making sound medical decisions under pressure. While in school, we found that developing this mindset has helped us fight burnout simply by maintaining composure and learning to stay calm in the face of mental hardship.

The skills we gained in jiu-jitsu have helped us adapt to the ever-demanding coursework requirements of a medical student. On the mat, when it feels like we are about to lose, we have learned to become comfortable in uncomfortable positions and can continue thinking with a sound mind. This mindset is difficult to attain in the standard classroom. No lecture can effectively teach you this adaptability and skillset. As we continue to learn more about our bodies and minds through training, it has become evident that strength in both will not only sustain a healthy lifestyle but also foster a successful career as a future physician.



## RUNNING THE RACE

**SAMIRA KANETKAR**

With laces tied and earbuds in, I head out on my usual route. As I approach the HPD crosswalk, I see blurs of teal blue scrubs in my periphery. I pass the endless line of cars with NSU stickers and gradually settle into my pace. I turn up 'Slow Burn' by Kacey Musgraves and let the past eight hours slip away. My mind drifts from hypertension and antiarrhythmic drugs as I tune into my senses: the warmth of sunshine on my skin, the breeze in my hair, and the euphony of nature around me. I smile and think to myself, 'This is the moment I look forward to each day.'

Running is the antithesis of how medical school feels at times. It is slow, peaceful, and simple. When I'm running, I finally disconnect from the never-ending-to-do list and my head clears. My runs give me a sense of tranquility amidst the chaos and provide profound clarity. I use this hour as a time to practice gratitude for this body, this life, and the privilege to pursue this career.

For me, the beauty of running has always been in the journey. I remember when I began training for my first marathon. What started as an optimistic goal quickly became the most challenging undertaking. During the particularly difficult long runs, I wondered how I would ever cross the finish line on race day.

This feeling is not unlike the one I've had since starting medical

school. The amount of knowledge we are expected to master feels insurmountable at times. Some days I am simultaneously overwhelmed by how little I know and how much there is left to learn. The thoughts creep in and I wonder, 'Am I bright enough to be a physician? Talented enough? Strong enough?' The self-doubt gets heavy to carry.

However, in these moments, I remind myself of the greatest lesson running has taught me: the power of consistency. At its core, running is about mental fortitude, grit, and determination, not skill. When I was training for my race, there were days when I struggled through one mile and then times when I felt euphoric for fifteen. But I learned that each run, no matter how rough, gets you a little bit closer to the finish line.

The same is true of medicine. There are thousands of physicians who have come before me and weathered this road. They were once in my shoes, and though their pace may have slowed and left them feeling stagnant, they continued to push forward. They are proof that it's not extraordinary people who run marathons or become doctors; it's ordinary people who are passionate about their craft and choose persistence over perfection.

It's easy to look ahead and seem distant from the finish line. It can feel daunting and unattainable. Running is my reminder to look behind me and be proud of the distance I've covered but also to look beside me and appreciate the people running the race with me, through all 26.2 miles.

## A RUN OF MY OWN

**MARIANNE REGIUS**

Over the last several years I have developed a passion for distance running, but what I did not realize was that my running heightened my risk of reflex syncope, to which I was unknowingly predisposed. Simply put, reflex syncope is a brief loss of consciousness caused by a drop in blood pressure or a decrease in heart rate. Often before the affected individual passes out there is seemingly idiopathic sweating and blurred vision. I had suffered mild versions of this and a few extreme cases of fainting resulting in trips to the emergency room, but I never understood why or what was happening until I found myself running marathons.

Growing up in Austin, Texas and then moving to Fort Lauderdale for medical school – I have experienced my fair share of "warm" weather (to put it mildly), but I was uneducated when it came to properly fueling my body. Hot weather, low electrolyte replenishment, and a predisposition to a low blood pressure and heart rate create the perfect storm for fainting episodes. Instinctually, I knew to drink water, but it was not until coming to NSU KPCOM that I learned the vital role of proper nutrition and electrolyte balances. I recall one painful day near the end of the summer I had gone for a 14-mile run down the Las Olas beach. After the run I went back to my apartment to shower and then set off to get something to eat. However, upon arriving at the restaurant, I felt that I could barely stand, my vision was pulsing in-and-out, I felt my legs buckling, and thought I was going to throw up. I barely made it to the restroom before I passed out. I was lucky because I did not hit my head falling, but I did bruise my knees. I do not remember much between locking the restroom door and waking up on the floor. How much time had passed, I thought to myself, why did this happen to me?

Scared out of my mind, I returned to the restaurant as if nothing had happened, but internally I felt like a corpse and my brain felt like it had turned to mush. I wanted to eat, and I needed to eat, but I felt like my organs were collapsing from within. I spent the rest of the day in bed slowly drinking water and eating crackers. It was at this point I was determined to find out what was happening; my doctor-brain switched on. I went to obtain a physical and bloodwork, but it was not until I went to a cardiologist that he was able to discern precisely what was happening. I was fascinated to learn I had significant bradycardia, my resting heart rate is in the 30s, and my blood pressure bordered on hypotension. My electrolyte levels (sodium, potassium, etc.) were either low or barely "normal."

He began to ask me questions about my diet, exercise, and lifestyle that no one else ever had because I am at a healthy BMI and physically fit, so my lifestyle is not usually questioned.

It was likely that my ever-increasing distance running played a role in naturally lowering my blood pressure and heart rate. The cardiologist asked my specifics about my diet and had me keep a short-term food journal to see if there were any potential confounding variables. My on the surface "healthy" diet was deeply flawed under closer inspection. I may have been eating enough calories, protein, and fat, but my salt and sugar levels were abysmal. My body was starving, and I was fainting as a result.

From here, I worked on becoming more in touch with my nutrition – drinking high electrolyte and natural sports drinks to replenish my losses after long runs and heavy workout sessions. Then to get enough salt I also had to start artificially adding it to my diet. It was hard at first because my body was not used to it, but over time I found an equilibrium. These changes combined with understanding prodromal warning signs and how to respond helped reduce my fainting spells and improve my recovery time. My endurance and speed also began improving, which became very noticeable in my dropping marathon times. I knew my changes were paying off as I was able to not only qualify for the Boston Marathon last year, but I had also broken the sub-8-minute mile pace for a marathon, two goals I had never thought possible.

Each day remains a challenge – I must be always on top of my nutrition and triggers, or I run the risk of a fainting episode that could lead a concussion or other injury. It is scary sometimes knowing there is always a risk, especially with my blood pressure and heart rate being so low. I still have occasional mild episodes with blurred vision and lightheadedness, but I rarely faint anymore, and I am thankful for that. My running times continue to improve and am minutes away from being considered an elite marathon runner and pulling my time down even closer to that needed for the US Olympic Trials Marathon. However, all of this would not be possible without the education I have garnered around my own body, it's unique conditions and needs, nutrition, and the larger picture behind physical health beyond what is painted in mainstream media. It is through this experience I have found a passion for exercise, medicine, and nutrition. The sacrifices and changes have led to greater triumphs than if I had continued to "put up" with my struggles. This freedom has truly given me a run of my own.





# TWITTER USE TO EDUCATE AND PROMOTE COMMUNITY SUPPORT OF BREAST CANCER

MINA MARIE GARCIA, WILLIAM LE, MARY ALLEN REYES

Twitter is a social media service that allows its users to create an account and post texts, photos, or videos. Twitter users can find information that is valuable to them by utilizing “hashtags” and spreading awareness through retweeting. Sometimes a tweet can gain traction and gain a lot of retweets, thereby making the tweet very popular. If there is a very popular tweet, it can go on the trending page of Twitter and reach a greater audience.<sup>1</sup> An example of a popular hashtag that was used was #MeToo. This was a movement on social media to raise awareness of sexual abuse and harassment. #MeToo allowed users to readily find information on the subject, as well as share their personal stories and create a community within the Twitter platform. Similarly, #BCSM (Breast Cancer Social Media) is a popular hashtag used in the breast cancer community to raise awareness and foster support.

Breast cancer occurs when the cells in a breast divide uncontrollably. This mostly occurs in women, although it can rarely occur in men as well. Although incidence rates of breast cancer have increased by 0.5% annually between 2010 and 2019, the mortality rates have declined steadily since their peak in 1989. In total, the death rate dropped by 43% from 1989-2020, translating to 460,000 fewer breast cancer deaths during that time.<sup>2</sup>

Using hashtags like #BCSM can educate users on these statistics and raise awareness. In 2014, 85,972 tweets were using the #BCSM compared to the 28,275 found in 2011. In addition, the number of impressions, which provides an estimate of how many people a single tweet will reach, also increased between 2011 and 2014.<sup>3</sup>

The #BCSM was used for the first time in 2011, signaling the creation of an online community that would support many patients with breast cancer, as well as their loved ones.<sup>4</sup> For cancer patients and their families, Twitter has become a source of education and a safe space to connect with others undergoing a similar experience. It allows users to connect virtually. Tweets between users eventually became conversations that encouraged the formation of supportive relationships. In one instance, two women with metastatic breast cancer passed away on the same day. Family and friends of each woman used Twitter to connect and grieve together.<sup>4</sup>

In addition to emotional support, online Twitter communities have been shown to improve mental health. In a 2014 study, it was found that the number of people with extreme or high anxiety decreased through the use of Twitter to communicate with others about their breast cancer.<sup>3</sup> Being able to share their stories with other patients and connect with physicians has provided an outlet to speak with those who are knowledgeable about or experiencing breast cancer. The conversations also expanded outside of Twitter, with more than half of the participants in the 2014 study acknowledging that they engaged with the #BCSM community beyond the online platform.<sup>3</sup> This emphasizes the importance of having both virtual and physical opportunities to interact with others.

Despite the increasing support for Twitter usage among breast cancer patients, there are pitfalls to its use. The Twitter platform lacks safeguards that would

normally be present in a face-to-face visit with a provider. Disclosure of private healthcare information allows for security breaches to occur, especially when a third-party site is involved.<sup>5</sup>

Additionally, Twitter users reflect an array of diverse individuals, each with their own thoughts, interests, and opinions. This presents an opportunity for misinformation. Healthcare individuals and non-healthcare individuals alike may post misleading breast cancer information through means of graphic images, false statistics, and misrepresentation of credentials. Information shared through these means is unregulated and poses a challenge for Twitter users to sort through and gather relevant information.<sup>6</sup> Although tedious, members of the breast cancer community must filter through this information and find reliable and trustworthy resources.

Furthermore, educational resources presented via Twitter alone were found to be incomparable to traditional in-office and hospital means. A study by Attai et al. (2015) found that “nearly 1 in 5 Twitter participants reported no improvement in education and 9% had persistent high anxiety despite #BCSM.” Their study concluded that Twitter usage supplemented traditional means of health education. It is important to consider the limitations that Twitter can have as an educational resource.

Overall, Twitter has been growing in popularity as a means of education to promote disease screening and prevention. The Twitter platform allows for information to be readily available to all users, regardless of their location. Patients, doctors, and other healthcare individuals alike utilize Twitter to raise awareness for diseases like breast cancer and improve disease education. Furthermore, it can enhance relationships between breast cancer patients, their families, and professionals. However, users must be aware of the limitations of using Twitter as the sole means of education.



## QUALITY ANALYSIS OF PATIENT EDUCATIONAL TIKTOK VIDEOS FOR KNEE INSTABILITY

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**Background:** Social media has provided an opportunity for wide-scale public health education with popular platforms such as Facebook, Instagram, and TikTok. Educators can use these platforms to reach massive audiences. There are few barriers to sharing information on social media which leads to both healthcare professionals and the general public sharing their knowledge. However, the quality of these videos has not been systematically evaluated.

**Purpose:** To characterize the quality of TikTok knee instability videos as a source of patient information using the DISCERN instrument and KEST (knee exercise scoring tool).

**Methods:** TikTok was searched on June 20, 2023, with the phrase "knee stability exercises". The search yielded 448 relevant videos. An initial screen for exclusion was performed to eliminate videos that (1) had no relevance to knee stability, pain, mobility, or strengthening (n=232), (2) exercises not directly related to knee stability/mobility exercises (n=20), videos with no educational component (n=7), and (4) reposted content (n=2). The remaining 187 hits were classified according to their source. A DISCERN scale was used to assess content quality. The KEST was developed to evaluate the educational suitability of each video. The scoring tool consists of five items: "Exercise cycle (does the video describe an exercise cycle?)", "Target (does the video describe a targeted area of the exercise?)", "Effect (does the video describe the expected effect of the exercise?)", "Precaution (does the video describe precautions of the exercise?)", and "Rationale (does the video explain the rationale of the exercise?)". The KEST grade scale is scored between 0 and 5 with increasing scores demonstrating higher quality. The sum of all five graded items is the final KEST score (0 to 25, with scores of 0 representing the lowest possible quality and scores of 25 representing the highest possible quality). Score variations based on video sources were analyzed using Statistical Package for Social Sciences (SPSS).

**Results:** A total of 187 videos met the inclusion criteria. 69.84% (n=132) were produced by general users and 29.1% (n=55) were produced by healthcare professionals. DISCERN scores of videos uploaded by general users had significantly lower scores in all four categories than those uploaded by healthcare professionals (P = < 0.001, P = 0.282, P = 0.131, and P = 0.010). The overall total DISCERN score was inversely correlated with the total number of views, likes, comments, favorites, and shares. General users' videos were graded as very poor (27.2%), poor (39.2%), fair (23.5%), good (9.7%), and excellent (0.0%). In comparison, the number of videos uploaded by healthcare professionals was deemed very poor (20%) poor (40.9%), fair (28.2%), good (9.1%), and excellent (1.8%). Per the KEST, both content from general users (12.31) and healthcare professionals (12.18) were of average quality (P = .809) with no significant difference between the two groups.

**Conclusion:** The current most popular knee instability videos on TikTok are of low quality, while these videos provide information on how to perform the exercise, very few content creators will provide sources for their information, risks of treatment, and how the treatment works. Furthermore, our study found an inverse correlation between video popularity, as measured by the number of views, and the DISCERN score. Low-quality videos were more popular compared to their higher-scoring counterparts. There is a difference between the ability of general TikTok users and healthcare professionals to provide evidence-based information (measured with the DISCERN tool), however, the exercises provided are comparable in their ability to educate on a treatment plan and its intended effect (measured with the KEST tool). Future studies should be done to examine the impact of this trend.

## ENCOURAGING THE USE OF OSTEOPATHIC MANIPULATIVE MEDICINE FOR COMMON AILMENTS

NIKITA SOOD, VIJAY PATEL

It is important for physicians to use all the tools available to them and find different approaches to treating their patients. Osteopathic Manipulative Medicine (OMM) encompasses a wide array of techniques that focus on maintaining homeostasis of the mind, body, and spirit. In conjunction with conventional medicine, it can provide relief for many ailments and conditions. We discuss the use of muscle energy, myofascial release, and strain counterstrain to relieve day-to-day aches and pains that do not warrant a trip to the pharmacy. As physicians, we should educate ourselves on what these techniques encompass and under what conditions it is appropriate to use them.

Tension-type headaches are a common category of headaches that present with a band-like sensation around the head. These are frequently caused by poor posture while sitting or studying, tensing of the neck and shoulder muscles (Shah 2023). Muscle energy technique (MET) is a direct technique that works to lengthen hypertonic muscles through isometric contraction followed by increased stretching (Talley 2022). In a direct technique, the restriction is brought into its barrier. Since tension-type headaches are linked to strained shoulders and neck muscles, MET that targets muscles such as the trapezius, scalenes, and splenius capitis can provide relief. It is essential to note the cases in which MET is contraindicated include acute fractures, severe osteoporosis, and post-surgery individuals (Shah 2023). However, tension headaches may be an indicator of a more ominous condition such as subarachnoid hemorrhage which warrants immediate medical attention. Physicians must be able to differentiate between various types of headaches and counsel patients on when to seek further medical attention.

Myofascial release can be performed in either an indirect or direct fashion wherein tense fascia is relaxed to improve mobility and blood flow to a region. The myofascia is continuous throughout the body therefore dysfunction in one area can affect another. Myofascial release can be utilized in the treatment of bug bites, which are typically caused by toxins or insect saliva resulting in a localized inflammatory process. The use of myofascial release can improve blood flow to a region, bring white blood cells to the area, and allow the toxin to be diluted in systemic blood circulation. Contraindications for myofascial release include

open wounds, infections, and deep vein thrombosis (Roberts 2022). However, myofascial release cannot be used to treat venomous or poisonous injuries.

Lastly, strain counterstrain is an indirect manipulative soft tissue technique centered around active feedback and repositioning to correct somatic dysfunction and changes in tissue texture (Fritz et al., 2022). Palpation is used to first identify tender points and is followed by gently moving the body to a position of ease for a sustained time, resulting in reduced strain and increased relaxation. Tenderpoints are localized tissue texture changes that cause pain upon palpation of muscle, ligaments, fascia, or tendons (Fritz et al., 2022). For daily life, counterstrain is an effective means of decreasing post-exercise soreness and relieving hypertonic muscle. In particular, it is useful in patients with chronic conditions with severe pain such as osteoarthritis, sacral torsions, and plantar fasciitis pain (Fritz et al., 2022). As with the techniques mentioned previously, It is essential to be mindful of contraindications such as severe illness, ligament instability, and severe osteoporosis.

As future physicians, it is critical to acknowledge our duty to fully evaluate our patients' condition and assess for possibilities of performing Osteopathic Manipulative Medicine. After ruling out contraindications, it would be beneficial to use these techniques as an adjuvant to existing medical therapy. The flexibility of OMM allows osteopathic physicians to tailor treatment to meet patient needs and physical limitations. Common ailments such as stress injuries, neck pain, bug bites, and headaches can be ameliorated through direct and indirect techniques such as muscle energy, myofascial release, and counterstrain. Encouraging physicians to use this approach can aid patients in times of distress, especially for those who are unable to afford insurance or costly medication.

# I, DOCTOR: CONSIDERATIONS ABOUT ARTIFICIAL INTELLIGENCE IN HEALTHCARE

ARA KHOYLYAN

OpenAI, an artificial intelligence (AI) research and development company, deployed its first publicly accessible language learning model, ChatGPT, in November 2022. The immense utility and breadth of application, juxtaposed with the inherent human suspicion of AI, has made ChatGPT a leading topic of discussion throughout the world. The field of healthcare has been no stranger to the impact of this revolutionary technology, though “revolutionary” proposals in this field rightly endure greater scrutiny given the repercussions associated with caring for human lives. The two central figures in healthcare are the patient and healthcare provider, and both are set to be significantly impacted by the introduction of AI to the relationship; the patient has a new avenue to consume personalized health information, and the provider has a new assisting tool in clinical care and management.

In January 2023, Glass Health launched Glass, an AI software designed to help establish differential diagnoses or clinical plans based on the signs and symptoms in patients’ presentations. This tool can procure information from its clinical database to diagnose and subsequently develop care plans based on unique queries or prompts. Essentially, it can be treated by practitioners as a colleague to bounce ideas off or garner advice. What is stopping electronic health record companies from implementing this technology for point-of-care assistance? The issue largely lies in the infancy of the software, which relies on continuous real-time training. In order to learn from new situations, the software has to learn from its own mistakes, which is can be costly in the delivery of healthcare. Furthermore, the nature of medicine is dynamic; contemporary dogma can change drastically in the future. It will take much time before this technology can be effectively and widely disseminated in the care and education of patients, and there are many additional questions to be addressed beforehand.

## Can software intended for clinical use be safeguarded from public consumption?

While companies like OpenAI and Glass Health are developing these technologies, there are no real barriers to general users accessing this software for personal diagnosis or evaluation. It is true that the same argument can be made for any health information website on the internet, though there remains an implicit understanding by the public that a doctor is necessary to definitively diagnose or treat health conditions.



With the introduction of AI, the line between clinician and computer may become blurred for patients, especially in the face of limited access to traditional healthcare. While one might consider the utility of AI in serving disadvantaged or at-risk populations, there is a long road ahead before that becomes an option.

## Can information provided by the software accommodate the nuances of healthcare?

On one end of the spectrum, tools need to implement complex, scenario-based clinical decision-making to provide real aid to clinicians. On the other end, tools need to have discretion in tone, grammar, and verbiage when dealing with sensitive and/or complex health topics while delivering information to patients. Additionally, to allow equal access to health information, these systems must be able to interpret different styles of queries and prompts influenced by factors such as geographic location, age, culture, and level of education. This will likely necessitate training beyond the textbook and more so on the job, as previously mentioned. Can software learn to essentially “self-curate” to address these nuances?

## Can we tolerate an imperfect machine the same way we tolerate an imperfect human?

No matter how much training is implemented, there will remain a chance of error. Some of those errors might cost lives. Even if patient care and outcomes are greatly enhanced using this technology, can society accept the possibility of semi-autonomous machine error potentially leading to catastrophic outcomes? For example, while statistics show that motor vehicle autopilot technology implemented by major car manufacturers decreases the rate of vehicular accidents, news and media headlines naturally highlight instances of system failures and, consequently, lives lost. Furthermore, an important question lies in the legality: How will these failures be defined or judged fairly in the future?

The early stages of momentous shifts often require the greatest vigilance; the same is the case for the implementation of AI in healthcare. This technology can certainly lead to a brighter future in healthcare, in which both the quality and level of access to healthcare are enhanced. However, it can come with costs that must be anticipated and preemptively managed to ensure that patients and healthcare systems do not pay a significant price.

## PRACTICING WHAT WE PREACH

LESSIE FARRISS

As healthcare providers, we are often encouraged to educate our patients on maintaining daily healthy practices like exercise, yoga & meditation, and clean eating. The research is well-documented supporting the benefits of these practices for our overall health and wellness. But, is research really what best informs this kind of patient education? Or might we be better prepared for these discussions with our patients when we ourselves are embodying such daily practices. Developing and maintaining these routines are first and foremost for our own wellness. In such a demanding profession with high stress and long hours, it goes without saying how important this is. The benefits are multidimensional. Our individual experience with healthy practices can help us further educate our patients at the same. Essentially, we should practice what we preach.

I have experienced the rewarding magnitude of practicing what I preach after years of teaching yoga. When I first became a yoga instructor during my undergraduate career, my teaching was informed by my yoga training: I often incorporated the traditions of yoga, or the most accepted standard practices, taught in my certification. I was knowledgeable on the foundational concepts, but I lacked experience and individuality in the field—I lacked wisdom. I wanted so badly to be better for my students. I had already completed the 200-hour training, but how could I learn more? I decided I would go deeper in developing my own practice. Staying disciplined in my routine every morning, I meditated, moved through improvised yoga sequences, and then journaled my experience. What I began to learn through this practice, and what I learned about myself, started to translate into my teachings as a yoga instructor. My imposter syndrome quickly faded, and my students benefited from the more authentic, genuine, and seasoned yogi I became and offered.

What if we applied this same concept to our work as healthcare providers? We all possess the foundational knowledge taught to us in school about the advantages of healthy practices. For example, we know that patients should get at least 30 minutes of exercise daily, participate in calming, cleansing practices like yoga and meditation, support their gut with unprocessed foods and the suggested portions of protein, fruits, and vegetables—the recommendation's list goes on. We study how such practices, or lack of them,

affect our cardiovascular system, GI tract, immunity, and mental health. All this information is presented to us and tested throughout medical school. But, we must question our ability to genuinely and most effectively educate our patients on these topics if the extent of our knowledge is based on textbooks, lectures, and research. Undoubtedly, our personal experience can inform our patient education. Imagine the possibilities of discussions around healthy habits that we can have with our patients when we are able to draw from our own journeys in developing and maintaining such habits. Our profession is always concerned with how we can best gain the respect and trust of patients. One suggestion is: let's practice what we preach.



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