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Top athletes and singers have coaches. Should you?

By Atul Gawande September 26, 2011

I've been a surgeon for eight years. For the past couple of them, my performance in the operating room has reached a plateau. I'd like to think it's a good thing—I've arrived at my professional peak. But mainly it seems as if I've just stopped getting better.

During the first two or three years in practice, your skills seem to improve almost daily. It's not about hand-eye coordination—you have that down halfway through your residency. As one of my professors once explained, doing surgery is no more physically difficult than writing in cursive. Surgical mastery is about familiarity and judgment. You learn the problems that can occur during a particular procedure or with a particular condition, and you learn how to either prevent or respond to those problems.

Say you've got a patient who needs surgery for appendicitis. These days, surgeons will typically do a laparoscopic appendectomy. You slide a small camera—a laparoscope—into the abdomen through a quarter-inch incision near the belly button, insert a long grasper through an incision beneath the waistline, and push a device for stapling and cutting through an incision in the left lower abdomen. Use the grasper to pick up the finger-size appendix, fire the stapler across its base and across the vessels feeding it, drop the severed organ into a plastic bag, and pull it out. Close up, and you're done. That's how you like it to go, anyway. But often it doesn't.

Even before you start, you need to make some judgments. Unusual anatomy, severe obesity, or internal scars from previous abdominal surgery could make it difficult to get the camera in safely; you don't want to poke it into a loop of intestine. You have to decide which camera-insertion method to use—there's a range of options—or whether to abandon the high-tech approach and do the operation the traditional way, with a wide-open incision that lets you see everything directly. If you do get your camera and instruments inside, you may have trouble grasping the appendix. Infection turns it into a fat, bloody, inflamed worm that sticks to everything around it—bowel, blood vessels, an ovary, the pelvic sidewall—and to free it you have to choose from a variety of tools and techniques. You can use a long cotton-tipped instrument to try to push the surrounding attachments away. You can use electrocautery, a hook, a pair of

scissors, a sharp-tip dissector, a blunt-tip dissector, a right-angle dissector, or a suction device. You can adjust the operating table so that the patient's head is down and his feet are up, allowing gravity to pull the viscera in the right direction. Or you can just grab whatever part of the appendix is visible and pull really hard.

Once you have the little organ in view, you may find that appendicitis was the wrong diagnosis. It might be a tumor of the appendix, Crohn's disease, or an ovarian condition that happened to have inflamed the nearby appendix. Then you'd have to decide whether you need additional equipment or personnel—maybe it's time to enlist another surgeon.

Over time, you learn how to head off problems, and, when you can't, you arrive at solutions with less fumbling and more assurance. After eight years, I've performed more than two thousand operations. Three-quarters have involved my specialty, endocrine surgery—surgery for endocrine organs such as the thyroid, the parathyroid, and the adrenal glands. The rest have involved everything from simple biopsies to colon cancer. For my specialized cases, I've come to know most of the serious difficulties that could arise, and have worked out solutions. For the others, I've gained confidence in my ability to handle a wide range of situations, and to improvise when necessary.

As I went along, I compared my results against national data, and I began beating the averages. My rates of complications moved steadily lower and lower. And then, a couple of years ago, they didn't. It started to seem that the only direction things could go from here was the wrong one.

Maybe this is what happens when you turn forty-five. Surgery is, at least, a relatively late-peaking career. It's not like mathematics or baseball or pop music, where your best work is often behind you by the time you're thirty. Jobs that involve the complexities of people or nature seem to take the longest to master: the average age at which S. & P. 500 chief executive officers are hired is fifty-two, and the age of maximum productivity for geologists, one study estimated, is around fifty-four. Surgeons apparently fall somewhere between the extremes, requiring both physical stamina and the judgment that comes with experience. Apparently, I'd arrived at that middle point.

It wouldn't have been the first time I'd hit a plateau. I grew up in Ohio, and when I was in high school I hoped to become a serious tennis player. But I peaked at seventeen. That was the year that Danny Trevas and I climbed to the top tier for doubles in the Ohio Valley. I qualified to play singles in a couple of national tournaments, only to be smothered in the first round both times. The kids at that level were playing a different game than I was. At Stanford, where I went to college, the tennis team ranked No. 1 in the nation, and I had no chance of being picked. That meant spending the past twenty-five years trying to slow the steady decline of my game.

I still love getting out on the court on a warm summer day, swinging a racquet strung to fifty-six pounds of tension at a two-ounce felt-covered sphere, and trying for those increasingly elusive moments when my racquet feels like an extension of my arm, and my legs are putting me exactly where the ball is going to be. But I came to accept that I'd never be remotely as good as I was when I was seventeen. In the hope of not losing my game altogether, I play when I can. I often bring my racquet on trips, for instance, and look for time to squeeze in a match.

One July day a couple of years ago, when I was at a medical meeting in Nantucket, I had an afternoon free and went looking for someone to hit with. I found a local tennis club and asked if there was anyone who wanted to play. There wasn't. I saw that there was a ball machine, and I asked the club pro if I could use it to practice ground strokes. He told me that it was for members only. But I could pay for a lesson and hit with him.

He was in his early twenties, a recent graduate who'd played on his college team. We hit back and forth for a while. He went easy on me at first, and then started running me around. I served a few points, and the tennis coach in him came out. You know, he said, you could get more power from your serve.

I was dubious. My serve had always been the best part of my game. But I listened. He had me pay attention to my feet as I served, and I gradually recognized that my legs weren't really underneath me when I swung my racquet up into the air. My right leg dragged a few inches behind my body, reducing my power. With a few minutes of tinkering, he'd added at least ten miles an hour to my serve. I was serving harder than I ever had in my life.

Not long afterward, I watched Rafael Nadal play a tournament match on the Tennis Channel. The camera flashed to his coach, and the obvious struck me as interesting: even Rafael Nadal has a coach. Nearly every élite tennis player in the world does. Professional athletes use coaches to make sure they are as good as they can be.

But doctors don't. I'd paid to have a kid just out of college look at my serve. So why did I find it inconceivable to pay someone to come into my operating room and coach me on my surgical technique?

What we think of as coaching was, sports historians say, a distinctly American development. During the nineteenth century, Britain had the more avid sporting culture; its leisure classes went in for games like cricket, golf, and soccer. But the aristocratic origins produced an ethos of amateurism: you didn't want to seem to be trying too hard. For the Brits, coaching, even practicing, was, well, unsporting. In America, a more competitive and entrepreneurial spirit took hold. In 1875, Harvard and Yale played one of the nation's first American-rules football games. Yale soon employed a head coach for the team, the legendary Walter Camp. He

established position coaches for individual player development, maintained detailed performance records for each player, and pre-planned every game. Harvard preferred the British approach to sports. In those first three decades, it beat Yale only four times.

The concept of a coach is slippery. Coaches are not teachers, but they teach. They're not your boss—in professional tennis, golf, and skating, the athlete hires and fires the coach—but they can be bossy. They don't even have to be good at the sport. The famous Olympic gymnastics coach Bela Karolyi couldn't do a split if his life depended on it. Mainly, they observe, they judge, and they guide.

Coaches are like editors, another slippery invention. Consider Maxwell Perkins, the great Scribner's editor, who found, nurtured, and published such writers as F. Scott Fitzgerald, Ernest Hemingway, and Thomas Wolfe. "Perkins has the intangible faculty of giving you confidence in yourself and the book you are writing," one of his writers said in a *New Yorker* Profile from 1944. "He never tells you what to do," another writer said. "Instead, he suggests to you, in an extraordinarily inarticulate fashion, what you want to do yourself."

The coaching model is different from the traditional conception of pedagogy, where there's a presumption that, after a certain point, the student no longer needs instruction. You graduate. You're done. You can go the rest of the way yourself. This is how élite musicians are taught. Barbara Lourie Sand's book "Teaching Genius" describes the methods of the legendary Juilliard violin instructor Dorothy DeLay. DeLay was a Perkins-like figure who trained an amazing roster of late-twentieth-century virtuosos, including Itzhak Perlman, Nigel Kennedy, Midori, and Sarah Chang. They came to the Juilliard School at a young age—usually after they'd demonstrated talent but reached the limits of what local teachers could offer. They studied with DeLay for a number of years, and then they graduated, launched like ships leaving drydock. She saw her role as preparing them to make their way without her.

Itzhak Perlman, for instance, arrived at Juilliard, in 1959, at the age of thirteen, and studied there for eight years, working with both DeLay and Ivan Galamian, another revered instructor. Among the key things he learned were discipline, a broad repertoire, and the exigencies of technique. "All DeLay's students, big or little, have to do their scales, their arpeggios, their études, their Bach, their concertos, and so on," Sand writes. "By the time they reach their teens, they are expected to be practicing a minimum of five hours a day." DeLay also taught them to try new and difficult things, to perform without fear. She expanded their sense of possibility. Perlman, disabled by polio, couldn't play the violin standing, and DeLay was one of the few who were convinced that he could have a concert career. DeLay was, her biographer observed, "basically in the business of teaching her pupils how to think, and to trust their ability to do so effectively." Musical expertise meant not needing to be coached.

Doctors understand expertise in the same way. Knowledge of disease and the science of treatment are always evolving. We have to keep developing our capabilities and avoid falling behind. So the training inculcates an ethic of perfectionism. Expertise is thought to be not a static condition but one that doctors must build and sustain for themselves.

Coaching in pro sports proceeds from a starkly different premise: it considers the teaching model naïve about our human capacity for self-perfection. It holds that, no matter how well prepared people are in their formative years, few can achieve and maintain their best performance on their own. One of these views, it seemed to me, had to be wrong. So I called Itzhak Perlman to find out what he thought.

I asked him why concert violinists didn't have coaches, the way top athletes did. He said that he didn't know, but that it had always seemed a mistake to him. He had enjoyed the services of a coach all along.

He had a coach? "I was very, very lucky," Perlman said. His wife, Toby, whom he'd known at Juilliard, was a concert-level violinist, and he'd relied on her for the past forty years. "The great challenge in performing is listening to yourself," he said. "Your physicality, the sensation that you have as you play the violin, interferes with your accuracy of listening." What violinists perceive is often quite different from what audiences perceive.

"My wife always says that I don't really know how I play," he told me. "She is an extra ear." She'd tell him if a passage was too fast or too tight or too mechanical—if there was something that needed fixing. Sometimes she has had to puzzle out what might be wrong, asking another expert to describe what she heard as he played.

Her ear provided external judgment. "She is very tough, and that's what I like about it," Perlman says. He doesn't always trust his response when he listens to recordings of his performances. He might think something sounds awful, and then realize he was mistaken: "There is a variation in the ability to listen, as well, I've found." He didn't know if other instrumentalists relied on coaching, but he suspected that many find help like he did. Vocalists, he pointed out, employ voice coaches throughout their careers.

The professional singers I spoke to describe their coaches in nearly identical terms. "We refer to them as our 'outside ears,' " the great soprano Renée Fleming told me. "The voice is so mysterious and fragile. It's mostly involuntary muscles that fuel the instrument. What we hear as we are singing is not what the audience hears." When she's preparing for a concert, she practices with her vocal coach for ninety minutes or so several times a week. "Our voices are very limited in the amount of time we can use them," she explains. After they've put in the hours to attain professional status, she said, singers have about twenty or

thirty years to achieve something near their best, and then to sustain that level. For Fleming, “outside ears” have been invaluable at every point.

So outside ears, and eyes, are important for concert-calibre musicians and Olympic-level athletes. What about regular professionals, who just want to do what they do as well as they can? I talked to Jim Knight about this. He is the director of the Kansas Coaching Project, at the University of Kansas. He teaches coaching—for schoolteachers. For decades, research has confirmed that the big factor in determining how much students learn is not class size or the extent of standardized testing but the quality of their teachers. Policymakers have pushed mostly carrot-and-stick remedies: firing underperforming teachers, giving merit pay to high performers, penalizing schools with poor student test scores. People like Jim Knight think we should push coaching.

California researchers in the early nineteen-eighties conducted a five-year study of teacher-skill development in eighty schools, and noticed something interesting. Workshops led teachers to use new skills in the classroom only ten per cent of the time. Even when a practice session with demonstrations and personal feedback was added, fewer than twenty per cent made the change. But when coaching was introduced—when a colleague watched them try the new skills in their own classroom and provided suggestions—adoption rates passed ninety per cent. A spate of small randomized trials confirmed the effect. Coached teachers were more effective, and their students did better on tests.

Knight experienced it himself. Two decades ago, he was trying to teach writing to students at a community college in Toronto, and floundering. He studied techniques for teaching students how to write coherent sentences and organize their paragraphs. But he didn’t get anywhere until a colleague came into the classroom and coached him through the changes he was trying to make. He won an award for innovation in teaching, and eventually wrote a Ph.D. dissertation at the University of Kansas on measures to improve pedagogy. Then he got funding to train coaches for every school in Topeka, and he has been expanding his program ever since. Coaching programs have now spread to hundreds of school districts across the country.

There have been encouraging early results, but the data haven’t yet been analyzed on a large scale. One thing that seems clear, though, is that not all coaches are effective. I asked Knight to show me what makes for good coaching.

We met early one May morning at Leslie H. Walton Middle School, in Albemarle County, Virginia. In 2009, the Albemarle County public schools created an instructional-coaching program, based in part on Knight’s methods. It recruited twenty-four teacher coaches for the twenty-seven schools in the semi-rural district. (Charlottesville is the county seat, but it runs a separate school district.) Many teacher-coaching programs concentrate on newer teachers, and this one is

no exception. All teachers in their first two years are required to accept a coach, but the program also offers coaching to any teacher who wants it.

Not everyone has. Researchers from the University of Virginia found that many teachers see no need for coaching. Others hate the idea of being observed in the classroom, or fear that using a coach makes them look incompetent, or are convinced, despite assurances, that the coaches are reporting their evaluations to the principal. And some are skeptical that the school's particular coaches would be of any use.

To find its coaches, the program took applications from any teachers in the system who were willing to cross over to the back of the classroom for a couple of years and teach colleagues instead of students. They were selected for their skills with people, and they studied the methods developed by Knight and others. But they did not necessarily have any special expertise in a content area, like math or science. The coaches assigned to Walton Middle School were John Hobson, a bushy-bearded high-school history teacher who was just thirty-three years old when he started but had been a successful baseball and tennis coach, and Diane Harding, a teacher who had two decades of experience but had spent the previous seven years out of the classroom, serving as a technology specialist.

Nonetheless, many veteran teachers—including some of the best—signed up to let the outsiders in. Jennie Critzer, an eighth-grade math teacher, was one of those teachers, and we descended on her first-period algebra class as a small troupe—Jim Knight, me, and both coaches. (The school seemed eager to have me see what both do.)

After the students found their seats—some had to search a little, because Critzer had scrambled the assigned seating, as she often does, to "keep things fresh"—she got to work. She had been a math teacher at Walton Middle School for ten years. She taught three ninety-minute classes a day with anywhere from twenty to thirty students. And she had every class structured down to the minute.

Today, she said, they would be learning how to simplify radicals. She had already put a "Do Now" problem on the whiteboard: "Simplify $\sqrt{36}$ and $\sqrt{32}$." She gave the kids three minutes to get as far as they could, and walked the rows of desks with a white egg timer in her hand as the students went at it. With her blond pigtails, purple striped sack dress, flip-flops, and painted toenails, each a different color, she looked like a graduate student headed to a beach party. But she carried herself with an air of easy command. The timer sounded.

For thirty seconds, she had the students compare their results with those of the partner next to them. Then she called on a student at random for the first problem, the simplified form of $\sqrt{36}$. "Six," the girl said.

“Stand up if you got six,” Critzer said. Everyone stood up.

She turned to the harder problem of simplifying √32. No one got the answer, 4 √2. It was a middle-level algebra class; the kids didn’t have a lot of confidence when it came to math. Yet her job was to hold their attention and get them to grasp and apply three highly abstract concepts—the concepts of radicals, of perfect squares, and of factoring. In the course of one class, she did just that.

She set a clear goal, announcing that by the end of class the students would know how to write numbers like √32 in a simplified form without using a decimal or a fraction. Then she broke the task into steps. She had the students punch √32 into their calculators and see what number they got (5.66). She had them try explaining to their partner how whole numbers differed from decimals. (“Thirty seconds, everyone.”) She had them write down other numbers whose square root was a whole number. She made them visualize, verbalize, and write the idea. Soon, they’d figured out how to find the factors of the number under the radical sign, and then how to move factors from under the radical sign to outside the radical sign.

Toward the end, she had her students try simplifying √20. They had one minute. One of the boys who’d looked alternately baffled and distracted for the first half of class hunched over his notebook scratching out an answer with his pencil. “This is so easy now,” he announced.

I told the coaches that I didn’t see how Critzer could have done better. They said that every teacher has something to work on. It could involve student behavior, or class preparation, or time management, or any number of other things. The coaches let the teachers choose the direction for coaching. They usually know better than anyone what their difficulties are.

Critzer’s concern for the last quarter of the school year was whether her students were effectively engaged and learning the material they needed for the state tests. So that’s what her coaches focussed on. Knight teaches coaches to observe a few specifics: whether the teacher has an effective plan for instruction; how many students are engaged in the material; whether they interact respectfully; whether they engage in high-level conversations; whether they understand how they are progressing, or failing to progress.

Novice teachers often struggle with the basic behavioral issues. Hobson told me of one such teacher, whose students included a hugely disruptive boy. Hobson took her to observe the boy in another teacher’s classroom, where he behaved like a prince. Only then did the teacher see that her style was the problem. She let students speak—and shout, and interrupt—without raising their hands, and go to the bathroom without asking. Then she got angry when things got out of control.

Jennie Critzer had no trouble maintaining classroom discipline, and she skillfully used a variety of what teachers call “learning structures”—lecturing, problem-solving, coöperative learning, discussion. But the coaches weren’t convinced that she was getting the best results. Of twenty kids, they noticed, at least four seemed at sea.

Good coaches know how to break down performance into its critical individual components. In sports, coaches focus on mechanics, conditioning, and strategy, and have ways to break each of those down, in turn. The U.C.L.A. basketball coach John Wooden, at the first squad meeting each season, even had his players practice putting their socks on. He demonstrated just how to do it: he carefully rolled each sock over his toes, up his foot, around the heel, and pulled it up snug, then went back to his toes and smoothed out the material along the sock’s length, making sure there were no wrinkles or creases. He had two purposes in doing this. First, wrinkles cause blisters. Blisters cost games. Second, he wanted his players to learn how crucial seemingly trivial details could be. “Details create success” was the creed of a coach who won ten N.C.A.A. men’s basketball championships.

At Walton Middle School, Hobson and Harding thought that Critzer should pay close attention to the details of how she used cooperative learning. When she paired the kids off, they observed, most struggled with having a “math conversation.” The worst pairs had a girl with a boy. One boy-girl pair had been unable to talk at all.

Élite performers, researchers say, must engage in “deliberate practice”—sustained, mindful efforts to develop the full range of abilities that success requires. You have to work at what you’re not good at. In theory, people can do this themselves. But most people do not know where to start or how to proceed. Expertise, as the formula goes, requires going from unconscious incompetence to conscious incompetence to conscious competence and finally to unconscious competence. The coach provides the outside eyes and ears, and makes you aware of where you’re falling short. This is tricky. Human beings resist exposure and critique; our brains are well defended. So coaches use a variety of approaches—showing what other, respected colleagues do, for instance, or reviewing videos of the subject’s performance. The most common, however, is just conversation.

At lunchtime, Critzer and her coaches sat down at a table in the empty school library. Hobson took the lead. “What worked?” he asked.

Critzer said she had been trying to increase the time that students spend on independent practice during classes, and she thought she was doing a good job. She was also trying to “break the plane” more—get out from in front of the whiteboard and walk among the students—and that was working nicely. But she knew the next question, and posed it herself: “So what didn’t go well?” She

noticed one girl who “clearly wasn’t getting it.” But at the time she hadn’t been sure what to do.

“How could you help her?” Hobson asked.

She thought for a moment. “I would need to break the concept down for her more,” she said. “I’ll bring her in during the fifth block.”

“What else did you notice?”

“My second class has thirty kids but was more forthcoming. It was actually easier to teach than the first class. This group is less verbal.” Her answer gave the coaches the opening they wanted. They mentioned the trouble students had with their math conversations, and the girl-boy pair who didn’t talk at all. “How could you help them be more verbal?”

Critzer was stumped. Everyone was. The table fell silent. Then Harding had an idea. “How about putting key math words on the board for them to use—like ‘factoring,’ ‘perfect square,’ ‘radical’?” she said. “They could even record the math words they used in their discussion.” Critzer liked the suggestion. It was something to try.

For half an hour, they worked through the fine points of the observation and formulated plans for what she could practice next. Critzer sat at a short end of the table chatting, the coaches at the long end beside her, Harding leaning toward her on an elbow, Hobson fingering his beard. They looked like three colleagues on a lunch break—which, Knight later explained, was part of what made the two coaches effective.

He had seen enough coaching to break even their performance down into its components. Good coaches, he said, speak with credibility, make a personal connection, and focus little on themselves. Hobson and Harding “listened more than they talked,” Knight said. “They were one hundred per cent present in the conversation.” They also parcelled out their observations carefully. “It’s not a normal way of communicating—watching what your words are doing,” he said. They had discomfiting information to convey, and they did it directly but respectfully.

I asked Critzer if she liked the coaching. “I do,” she said. “It works with my personality. I’m very self-critical. So I grabbed a coach from the beginning.” She had been concerned for a while about how to do a better job engaging her kids. “So many things have to come together. I’d exhausted everything I knew to improve.”

She told me that she had begun to burn out. “I felt really isolated, too,” she said. Coaching had changed that. “My stress level is a lot less now.” That might have

been the best news for the students. They kept a great teacher, and saw her get better. “The coaching has definitely changed how satisfying teaching is,” she said.

I decided to try a coach. I called Robert Osteen, a retired general surgeon, whom I trained under during my residency, to see if he might consider the idea. He’s one of the surgeons I most hoped to emulate in my career. His operations were swift without seeming hurried and elegant without seeming showy. He was calm. I never once saw him lose his temper. He had a plan for every circumstance. He had impeccable judgment. And his patients had unusually few complications.

He specialized in surgery for tumors of the pancreas, liver, stomach, esophagus, colon, breast, and other organs. One test of a cancer surgeon is knowing when surgery is pointless and when to forge ahead. Osteen never hemmed or hawed, or pushed too far. “Can’t be done,” he’d say upon getting a patient’s abdomen open and discovering a tumor to be more invasive than expected. And, without a pause for lament, he’d begin closing up again.

Year after year, the senior residents chose him for their annual teaching award. He was an unusual teacher. He never quite told you what to do. As an intern, I did my first splenectomy with him. He did not draw the skin incision to be made with the sterile marking pen the way the other professors did. He just stood there, waiting. Finally, I took the pen, put the felt tip on the skin somewhere, and looked up at him to see if I could make out a glimmer of approval or disapproval. He gave me nothing. I drew a line down the patient’s middle, from just below the sternum to just above the navel.

“Is that really where you want it?” he said. Osteen’s voice was a low, car-engine growl, tinged with the accent of his boyhood in Savannah, Georgia, and it took me a couple of years to realize that it was not his voice that scared me but his questions. He was invariably trying to get residents to think—to think like surgeons—and his questions exposed how much we had to learn.

“Yes,” I answered. We proceeded with the operation. Ten minutes into the case, it became obvious that I’d made the incision too small to expose the spleen. “I should have taken the incision down below the navel, huh?” He grunted in the affirmative, and we stopped to extend the incision.

I reached Osteen at his summer home, on Buzzards Bay. He was enjoying retirement. He spent time with his grandchildren and travelled, and, having been an avid sailor all his life, he had just finished writing a book on nineteenth-century naval mapmaking. He didn’t miss operating, but one day a week he held a teaching conference for residents and medical students. When I explained the experiment I wanted to try, he was game.

He came to my operating room one morning and stood silently observing from a step stool set back a few feet from the table. He scribbled in a notepad and changed position once in a while, looking over the anesthesia drape or watching from behind me. I was initially self-conscious about being observed by my former teacher. But I was doing an operation—a thyroidectomy for a patient with a cancerous nodule—that I had done around a thousand times, more times than I've been to the movies. I was quickly absorbed in the flow of it—the symphony of coördinated movement between me and my surgical assistant, a senior resident, across the table from me, and the surgical technician to my side.

The case went beautifully. The cancer had not spread beyond the thyroid, and, in eighty-six minutes, we removed the fleshy, butterfly-shaped organ, carefully detaching it from the trachea and from the nerves to the vocal cords. Osteen had rarely done this operation when he was practicing, and I wondered whether he would find anything useful to tell me.

We sat in the surgeons' lounge afterward. He saw only small things, he said, but, if I were trying to keep a problem from happening even once in my next hundred operations, it's the small things I had to worry about. He noticed that I'd positioned and draped the patient perfectly for me, standing on his left side, but not for anyone else. The draping hemmed in the surgical assistant across the table on the patient's right side, restricting his left arm, and hampering his ability to pull the wound upward. At one point in the operation, we found ourselves struggling to see up high enough in the neck on that side. The draping also pushed the medical student off to the surgical assistant's right, where he couldn't help at all. I should have made more room to the left, which would have allowed the student to hold the retractor and freed the surgical assistant's left hand.

Osteen also asked me to pay more attention to my elbows. At various points during the operation, he observed, my right elbow rose to the level of my shoulder, on occasion higher. "You cannot achieve precision with your elbow in the air," he said. A surgeon's elbows should be loose and down by his sides. "When you are tempted to raise your elbow, that means you need to either move your feet"—because you're standing in the wrong position—"or choose a different instrument."

He had a whole list of observations like this. His notepad was dense with small print. I operate with magnifying loupes and wasn't aware how much this restricted my peripheral vision. I never noticed, for example, that at one point the patient had blood-pressure problems, which the anesthesiologist was monitoring. Nor did I realize that, for about half an hour, the operating light drifted out of the wound; I was operating with light from reflected surfaces. Osteen pointed out that the instruments I'd chosen for holding the incision open had got tangled up, wasting time.

That one twenty-minute discussion gave me more to consider and work on than I'd had in the past five years. It had been strange and more than a little awkward having to explain to the surgical team why Osteen was spending the morning with us. "He's here to coach me," I'd said. Yet the stranger thing, it occurred to me, was that no senior colleague had come to observe me in the eight years since I'd established my surgical practice. Like most work, medical practice is largely unseen by anyone who might raise one's sights. I'd had no outside ears and eyes.

Osteen has continued to coach me in the months since that experiment. I take his observations, work on them for a few weeks, and then get together with him again. The mechanics of the interaction are still evolving. Surgical performance begins well before the operating room, with the choice made in the clinic of whether to operate in the first place. Osteen and I have spent time examining the way I plan before surgery. I've also begun taking time to do something I'd rarely done before—watch other colleagues operate in order to gather ideas about what I could do.

A former colleague at my hospital, the cancer surgeon Caprice Greenberg, has become a pioneer in using video in the operating room. She had the idea that routine, high-quality video recordings of operations could enable us to figure out why some patients fare better than others. If we learned what techniques made the difference, we could even try to coach for them. The work is still in its early stages. So far, a handful of surgeons have had their operations taped, and begun reviewing them with a colleague.

I was one of the surgeons who got to try it. It was like going over a game tape. One rainy afternoon, I brought my laptop to Osteen's kitchen, and we watched a recording of another thyroidectomy I'd performed. Three video pictures of the operation streamed on the screen—one from a camera in the operating light, one from a wide-angle room camera, and one with the feed from the anesthesia monitor. A boom microphone picked up the sound.

Osteen liked how I'd changed the patient's positioning and draping. "See? Right there!" He pointed at the screen. "The assistant is able to help you now." At one point, the light drifted out of the wound and we watched to see how long it took me to realize I'd lost direct illumination: four minutes, instead of half an hour.

"Good," he said. "You're paying more attention."

He had new pointers for me. He wanted me to let the residents struggle thirty seconds more when I asked them to help with a task. I tended to give them precise instructions as soon as progress slowed. "No, use the DeBakey forceps," I'd say, or "Move the retractor first." Osteen's advice: "Get them to think." It's the only way people learn.

And together we identified a critical step in a thyroidectomy to work on: finding and preserving the parathyroid glands—four fatty glands the size of a yellow split pea that sit on the surface of the thyroid gland and are crucial for regulating a person's calcium levels. The rate at which my patients suffered permanent injury to those little organs had been hovering at two per cent. He wanted me to try lowering the risk further by finding the glands earlier in the operation.

Since I have taken on a coach, my complication rate has gone down. It's too soon to know for sure whether that's not random, but it seems real. I know that I'm learning again. I can't say that every surgeon needs a coach to do his or her best work, but I've discovered that I do.

Coaching has become a fad in recent years. There are leadership coaches, executive coaches, life coaches, and college-application coaches. Search the Internet, and you'll find that there's even Twitter coaching. ("Would you like to learn how to get new customers/clients, make valuable business contacts, and increase your revenue using Twitter? Then this Twitter coaching package is perfect for you"—at about eight hundred dollars for a few hour-long Skype sessions and some e-mail consultation.) Self-improvement has always found a ready market, and most of what's on offer is simply one-on-one instruction to get amateurs through the essentials. It's teaching with a trendier name. Coaching aimed at improving the performance of people who are already professionals is less usual. It's also riskier: bad coaching can make people worse.

The world-famous high jumper Dick Fosbury, for instance, developed his revolutionary technique—known as the Fosbury Flop—in defiance of his coaches. They wanted him to stick to the time-honored straddle method of going over the high bar leg first, face down. He instinctively wanted to go over head first, back down. It was only by perfecting his odd technique on his own that Fosbury won the gold medal at the 1968 Mexico City Olympics, setting a new record on worldwide television, and reinventing high-jumping overnight.

Renée Fleming told me that when her original voice coach died, ten years ago, she was nervous about replacing her. She wanted outside ears, but they couldn't be just anybody's. "At my stage, when you're at my level, you don't really want to go to a new person who might mess things up," she said. "Somebody might say, 'You know, you've been singing that way for a long time, but why don't you try this?' If you lose your path, sometimes you can't find your way back, and then you lose your confidence onstage and it really is just downhill."

The sort of coaching that fosters effective innovation and judgment, not merely the replication of technique, may not be so easy to cultivate. Yet modern society increasingly depends on ordinary people taking responsibility for doing extraordinary things: operating inside people's bodies, teaching eighth graders algebraic concepts that Euclid would have struggled with, building a highway through a mountain, constructing a wireless computer network across a state,

running a factory, reducing a city's crime rate. In the absence of guidance, how many people can do such complex tasks at the level we require? With a diploma, a few will achieve sustained mastery; with a good coach, many could. We treat guidance for professionals as a luxury—you can guess what gets cut first when school-district budgets are slashed. But coaching may prove essential to the success of modern society.

There was a moment in sports when employing a coach was unimaginable—and then came a time when not doing so was unimaginable. We care about results in sports, and if we care half as much about results in schools and in hospitals we may reach the same conclusion. Local health systems may need to go the way of the Albemarle school district. We could create coaching programs not only for surgeons but for other doctors, too—internists aiming to sharpen their diagnostic skills, cardiologists aiming to improve their heart-attack outcomes, and all of us who have to figure out ways to use our resources more efficiently. In the past year, I've thought nothing of asking my hospital to spend some hundred thousand dollars to upgrade the surgical equipment I use, in the vague hope of giving me finer precision and reducing complications. Avoiding just one major complication saves, on average, fourteen thousand dollars in medical costs—not to mention harm to a human being. So it seems worth it. But the three or four hours I've spent with Osteen each month have almost certainly added more to my capabilities than any of this.

Talk about medical progress, and people think about technology. We await every new cancer drug as if it will be our salvation. We dream of personalized genomics, vaccines against heart disease, and the unfathomed efficiencies from information technology. I would never deny the potential value of such breakthroughs. My teen-age son was spared high-risk aortic surgery a couple of years ago by a brief stent procedure that didn't exist when he was born. But the capabilities of doctors matter every bit as much as the technology. This is true of all professions. What ultimately makes the difference is how well people use technology. We have devoted disastrously little attention to fostering those abilities.

A determined effort to introduce coaching could change this. Making sure that the benefits exceed the cost will take work, to be sure. So will finding coaches—though, with the growing pool of retirees, we may already have a ready reserve of accumulated experience and know-how. The greatest difficulty, though, may simply be a profession's willingness to accept the idea. The prospect of coaching forces awkward questions about how we regard failure. I thought about this after another case of mine that Bob Osteen came to observe. It didn't go so well.

The patient was a woman with a large tumor in the adrenal gland atop her right kidney, and I had decided to remove it using a laparoscope. Some surgeons might have questioned this decision. When adrenal tumors get to be a certain size, they can't be removed laparoscopically—you have to do a traditional, open

operation and get your hands inside. I persisted, though, and soon had cause for regret. Working my way around this tumor with a ten-millimetre camera on the end of a foot-and-a-half-long wand was like trying to find my way around a mountain with a penlight. I continued with my folly too long, and caused bleeding in a blind spot. The team had to give her a blood transfusion while I opened her belly wide and did the traditional operation.

Osteen watched, silent and blank-faced the entire time, taking notes. My cheeks burned; I was mortified. I wished I'd never asked him along. I tried to be rational about the situation—the patient did fine. But I had let Osteen see my judgment fail; I'd let him see that I may not be who I want to be.

This is why it will never be easy to submit to coaching, especially for those who are well along in their career. I'm ostensibly an expert. I'd finished long ago with the days of being tested and observed. I am supposed to be past needing such things. Why should I expose myself to scrutiny and fault-finding?

I have spoken to other surgeons about the idea. "Oh, I can think of a few people who could use some coaching" has been a common reaction. Not many say, "Man, could I use a coach!" Once, I wouldn't have, either.

Osteen and I sat together after the operation and broke the case down, weighing the decisions I'd made at various points. He focussed on what I thought went well and what I thought didn't. He wasn't sure what I ought to have done differently, he said. But he asked me to think harder about the anatomy of the attachments holding the tumor in.

"You seemed to have trouble keeping the tissue on tension," he said. He was right. You can't free a tumor unless you can lift and hold taut the tissue planes you need to dissect through. Early on, when it had become apparent that I couldn't see the planes clearly, I could have switched to the open procedure before my poking around caused bleeding. Thinking back, however, I also realized that there was another maneuver I could have tried that might have let me hold the key attachments on tension, and maybe even freed the tumor.

"Most surgery is done in your head," Osteen likes to say. Your performance is not determined by where you stand or where your elbow goes. It's determined by where you decide to stand, where you decide to put your elbow. I knew that he could drive me to make smarter decisions, but that afternoon I recognized the price: exposure.

For society, too, there are uncomfortable difficulties: we may not be ready to accept—or pay for—a cadre of people who identify the flaws in the professionals upon whom we rely, and yet hold in confidence what they see. Coaching done well may be the most effective intervention designed for human performance. Yet the allegiance of coaches is to the people they work with; their success depends

on it. And the existence of a coach requires an acknowledgment that even expert practitioners have significant room for improvement. Are we ready to confront this fact when we're in their care?

"Who's that?" a patient asked me as she awaited anesthesia and noticed Osteen standing off to the side of the operating room, notebook in hand.

I was flummoxed for a moment. He wasn't a student or a visiting professor. Calling him "an observer" didn't sound quite right, either.

"He's a colleague," I said. "I asked him along to observe and see if he saw things I could improve."

The patient gave me a look that was somewhere between puzzlement and alarm.

"He's like a coach," I finally said.

She did not seem reassured.