



The Surgical Mindset: What Factors Contribute to a Successful Surgical Career?

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The journey to a successful career in surgery goes beyond mastering technical skills – it requires a "Surgical Mindset." This concept focuses on how non-technical factors contribute to achieving success in the demanding field of surgery. Insights gathered from surgeons highlight the challenges they encounter in their daily work environments. Through self-report surveys, this research evaluates three critical domains that shape a strong surgical mindset: communication and teamwork skills, resilience, and work-life balance. Aspiring surgeons can use these findings to understand the vital mental and emotional skills needed for long-term success in the profession.

Introduction

Surgery is often viewed as a field requiring only strong technical skills, like mastering complex procedures.

However, the reality of a surgeon's life goes far beyond technical expertise.

Surgeons work long hours, handle high-pressure situations, and struggle to balance the demands of their profession with their personal lives. These challenges highlight the importance of developing skills that support both mental and emotional well-being.

Resilience and stress management play crucial roles in maintaining mental health and successful performance in high-stress environments. A RAND

report found evidence linking teamwork behaviors—such as coordination, mutual respect, role clarity, and shared goals—to improved clinical outcomes (RAND Corporation; 2008)

The concept of a "Surgical Mindset" ties these ideas together, connecting the mental readiness and adaptability required for a successful career in surgery. It includes the ability to stay calm under pressure, make quick decisions, and recover from setbacks while maintaining professional performance. Building this mindset is a gradual process shaped by experiences and consistent practice in addressing emotional challenges.



This study aims to uncover what it takes to develop this important mindset.

Examining critical areas like resilience, stress management, and emotional well-being provides student surgeons with a deeper understanding of the

➤ **Methods**

The “Surgical Mindset” study involved surveys with surgeons from various specialties, focusing on the non-technical skills that contribute to a successful surgical career. A total of 21 structured questions were designed to gather insights on three critical domains: communication and teamwork, resilience, and work-life balance. To ensure different perspectives, participants were recruited from local hospitals representing various specialties. The study was approved by the *Institutional Review Board* (IRB), ensuring that all ethical standards for research involving human subjects were met.

Surgeons were asked to share specific cases where these non-technical skills

non-technical skills necessary to thrive.

Mental readiness, combined with surgical expertise, forms the foundation of a successful career in this challenging yet rewarding field.

played a pivotal role in their professional development. Their responses highlighted real-world applications of communication and teamwork, strategies for building resilience, and approaches to maintaining work-life balance. These detailed accounts offered valuable insights into the everyday challenges surgeons face and how they address them.

The data collected from the surveys was categorized and analyzed to identify recurring themes. The analysis revealed the factors surgeons consider essential for mental readiness in the field. These findings highlight the need to include these non-technical skills in surgical training and development.

Independent Variables	Dependent Variables
In this study, the primary factors being explored for their impact on a surgeon's success and mindset are communication and teamwork, resilience, and work-life balance . These non-technical skills are integral to developing a strong "Surgical Mindset," which is essential for navigating the demands and pressures of the surgical profession.	The dependent variables in this research represent the outcomes that may result from the presence or absence of these non-technical skills. The main outcomes being measured are career success, job satisfaction, and mental well-being .

➤ Overview of Average Effects On the Mindset

A strong surgical mindset is critical in shaping a surgeon's ability to navigate both the demands of their profession and their personal life. Non-technical skills, such as resilience, effective communication, teamwork, and work-life balance, play a significant role in how surgeons manage the pressures they face daily. Resilience, for example, enables surgeons to remain calm under pressure and recover quickly from difficult situations, which is essential in high-stress surgical environments. Communication and teamwork are equally important, as they directly affect the success of surgical procedures. Surgeons who work well with their teams and communicate clearly reduce the chances of errors and ensure smoother, more efficient operations. Maintaining a healthy work-life balance is another key factor, helping surgeons avoid burnout and sustain focus on their long-term career goals.

Tele-education has grown in popularity in recent years; however, its use in medical schools has been inconsistent, and it appears to be more common in basic medical science courses than clinical instruction (Hailemariam, Nigatu, & Melaku, 2022). This suggests that while these

non-technical skills are crucial in surgical training, they may not always be taught as effectively in virtual learning environments, especially when it comes to clinical practice.

Together, these non-technical skills form the foundation for a surgeon's long-term success and job satisfaction. This mindset not only enhances their immediate effectiveness but also contributes to sustained career fulfillment and improved overall well-being. These skills, therefore, are important not just for individual performance but also for shaping a positive, supportive environment within surgical teams.

Hypothesis

Surgeons who develop strong non-technical skills, such as communication & teamwork, resilience, and work-life balance, are likely to experience greater long-term success and job satisfaction. These skills help surgeons manage stress, work well with their teams, and maintain mental well-being, all of which contribute to their overall effectiveness. The study expects to find that surgeons who focus on these areas will perform better, handle challenges more effectively, and enjoy a more fulfilling career.

→ Limitations

A key limitation of this study is the small sample size, as only three surgeons responded to the survey despite it being sent to twenty individuals. While this limited response rate may affect the generalizability of the findings, it's important to note that the busy schedules of surgeons, combined with their demanding workloads, made data collection challenging. In order to gather responses, weekly reminders were sent, and the fact that even a few surgeons were able to participate highlights their commitment to contributing to the study despite their time constraints.

Despite this limitation, the responses provided valuable insights into the factors influencing a surgeon's mindset. Future research with a larger and more diverse sample could build on these findings, offering a more comprehensive understanding of the surgical mindset and its impact on career success.

Results

→ Communication and Teamwork Skills

Effective communication and teamwork are fundamental to the surgical mindset, influencing the efficiency and safety of surgical procedures. In fact, research by Sorbero et al. (2008) suggests that when team training is systematically designed using the science of learning, it equips healthcare providers with the necessary knowledge, skills, and attitudes for effective teamwork. This evidence supports the idea that structured communication and clearly defined team roles are crucial in high-pressure surgical environments. The data gathered highlights specific strategies used to prevent misunderstandings, foster collaboration, and build cohesive surgical teams. By examining these approaches, we can better understand how effective teamwork contributes to successful surgical outcomes.

Interventional gastroenterologist

One attending *interventional gastroenterologist* working in a community hospital highlighted the use of hand signals and visual cues to support verbal communication, minimizing misunderstandings during procedures. They used the “read-back” method, asking team members to repeat instructions to confirm accuracy, preventing miscommunication.

They rated their confidence in handling teamwork disagreements as 5 out of 5, emphasizing the significance of strong interpersonal skills in maintaining a peaceful surgical environment.

A key strategy mentioned was maintaining consistency in team composition, where each member has a defined role. This structured approach fosters efficient collaboration, reducing the potential for miscommunication. For new team members, mandatory shadowing and practice sessions were required for several months before they actively participated in surgeries. This process not only ensures technical proficiency but also supports seamless integration into the established team dynamic.

General surgeon

One surgical fellow, a *general surgeon* working in a community hospital, recommended designating a specific team member to serve as the primary communicator during procedures. This role ensures that all instructions are clearly relayed and acknowledged, reducing confusion in high-stress situations. They noted that having a central point of communication helps maintain focus and improves overall team coordination.

They rated their confidence in handling teamwork disagreements as 5 out of 5, indicating a strong ability to navigate conflicts calmly and constructively. They explained that this confidence comes from years of experience, active listening, and addressing issues immediately before they escalate. They also emphasized the importance of creating a respectful environment where every team member feels heard, which helps resolve disagreements more efficiently.

→ Resilience

Resilience is crucial for surgeons to navigate challenges, adapt to unexpected situations, and maintain high performance. This section investigates how surgeons develop and sustain resilience through continuous learning, motivation, and risk management. The responses reveal key factors that contribute to emotional strength and problem-solving abilities in demanding surgical settings. Understanding these elements provides insights into how resilience shapes the surgical mindset and supports long-term career growth.



General surgeon

One attending *general surgeon* shared that resilience is an important part of developing a strong surgical mindset, especially when dealing with stress and unexpected challenges in the operating room. They rated the impact of learning from difficult cases as 5 out of 5, explaining that these experiences helped them reflect and improve their skills. They also said that tough cases pushed them to grow, both personally and professionally, by teaching them how to stay calm and focused under pressure.

The surgeon mentioned that support from coworkers, family, and friends plays a big role in staying motivated. They find personal satisfaction in helping patients, which keeps them going even when the job gets overwhelming. Having a strong support system makes it easier to recover from setbacks and continue learning. This emotional balance is key to building long-term strength in such a demanding career.

They also rated their confidence in handling surgical challenges as 5 out of 5, showing they feel prepared and adaptable. They said this confidence comes from a mindset that allows for calculated risk-taking, which helps them make smart decisions and stay ready for anything unexpected. This connects to research by Yeager et al. (2019), which highlights how mentorship and training programs can help surgeons develop a growth mindset. The surgeon's strong resilience and confidence may have been shaped by these supports, showing how important structured learning and guidance are in surgery.

→ Work-Life Balance

Achieving work-life balance is important for maintaining well-being and productivity in a demanding surgical career. This section examines the strategies surgeons use to manage career pressures while maintaining personal fulfillment and motivation. The findings highlight the importance of time management, stress relief activities, and maintaining confidence in professional skills. By exploring these approaches, we gain a deeper understanding of how work-life balance influences the surgical mindset and overall job satisfaction.

Our *interventional gastroenterologist* participant explained that setting aside time for vacations, rest, and stress-relieving hobbies helps prevent burnout. The surgeon reported enjoying activities like music, traveling, and running, which helped them relax mentally and emotionally. These breaks allowed them to recharge and return to work feeling more focused and motivated.

Even with these strategies, the surgeon admitted that balancing time is still one of the hardest parts of the job. They rated the likelihood of continuing to struggle with time management as 5 out of 5, showing how challenging it can be to meet work demands without letting them take over personal life. This response highlights a common issue many surgeons face—finding enough time to care for both their patients and themselves.

Despite the difficulty, the surgeon expressed strong confidence in their surgical skills and said they consistently see good results with their patients. They explained that the solid training they received in medical school and residency helped them feel prepared and capable, even when things get busy. This shows that strong education and preparation can make it easier for surgeons to handle stress and maintain a healthy work-life balance over time.



Thematic Analysis

Career Success

☒ Effective Communication and Team Dynamics

Clear communication, reinforced by hand signals and read-back methods, reduces misunderstandings during surgery. Using consistent team members with well-defined roles enhances efficiency and minimizes errors, contributing to smooth surgical procedures.

☒ Role Clarity and Team Consistency

Ensuring that each team member has a specific role and maintaining consistent team composition promotes seamless coordination. New members undergo mandatory shadowing and practice sessions to ensure they are well-integrated into the team dynamic before participating in surgeries.

☒ Learning from Challenging Cases

Embracing complex cases as learning opportunities helps surgeons develop critical thinking and adaptability. High-impact experiences contribute to career growth by improving decision-making skills and boosting confidence in handling unexpected situations during procedures.

Job Satisfaction

☒ Confidence from Comprehensive Training

Intensive training during medical school and residency builds a strong foundation of knowledge and skills, leading to high confidence in surgical abilities. This preparation is crucial for effectively managing surgical challenges and achieving positive patient outcomes.

☒ Continuous Learning and Personal Growth

The commitment to continuous learning, driven by challenging cases and ongoing education, supports intellectual growth and professional development. This pursuit of knowledge leads to job satisfaction and a sense of accomplishment in mastering complex surgical techniques.

☒ Positive Patient Outcomes and Fulfillment

Achieving positive patient outcomes consistently reinforces a sense of purpose and personal fulfillment. This satisfaction from helping patients motivates surgeons to maintain high performance and dedication to their profession.

Mental Well-Being

☒ Emotional Regulation and Resilience Under Pressure

Learning from challenging cases and maintaining confidence in overcoming surgical obstacles reflect emotional regulation and resilience. These traits enable surgeons to manage stress, adapt to unexpected situations, and maintain focus during high-pressure procedures.

☒ Support Systems and Motivation

Support from teamwork and loved ones contributes to emotional stability and motivation. This strong support network helps surgeons navigate the emotional demands of their careers while maintaining productivity and well-being.

☒ Stress Relief and Emotional Balance

Engaging in stress-relieving activities, such as music, traveling, and physical exercise, like running, provides emotional relaxation and mental recovery. These activities are essential for maintaining motivation, preventing burnout, and supporting overall mental health.



Conclusion

The findings of this study support the hypothesis that surgeons who develop strong non-technical skills, specifically communication and teamwork, resilience, and work-life balance, experience greater long-term success and job satisfaction.

Effective **communication** strategies, such as using hand signals and the read-back method, combined with maintaining consistent team roles, enhance collaboration and efficiency in the operating room. These practices minimize misunderstandings and promote a cohesive team dynamic, directly contributing to successful surgical outcomes. By fostering a structured communication environment, surgeons not only improve procedural safety but also enhance their own confidence and leadership abilities.

Resilience emerged as another key factor influencing surgical success. Surgeons who learn from challenging cases and embrace risk-taking

demonstrate high adaptability and problem-solving skills. This mindset enables them to handle complex surgical scenarios with confidence, contributing to career growth and professional advancement. The motivation drawn from continuous learning, support systems, and personal fulfillment from helping patients reinforces emotional strength, helping surgeons maintain productivity even in high-stress situations.

Work-life balance also plays an important role in supporting long-term career satisfaction and mental well-being. The use of scheduled time off, vacations, and stress-relieving activities, such as music, traveling, and

physical exercise, enables surgeons to recharge and maintain motivation. However, despite these strategies, time management challenges remain a significant concern. This ongoing struggle highlights the need for effective work-life balance strategies to ensure

long-term well-being. Overall, the confidence gained from comprehensive training and positive patient outcomes reinforces a sense of purpose, supporting mental health and career satisfaction.

In conclusion, the study demonstrates that non-technical skills significantly contribute to a successful surgical mindset. By prioritizing communication and teamwork, resilience, and work-life balance, surgeons are better equipped to handle challenges, maintain mental well-being, and achieve professional fulfillment. These findings emphasize the importance of incorporating non-technical skill development into surgical training programs to prepare surgeons for the complexities of a demanding medical career.

References

1. Sorbero ME, Farley DO, Mattke S, Lovejoy SL. Outcome Measures for Effective Teamwork in Inpatient Care: Final Report. RAND Corporation; 2008. Accessed January 26, 2025. https://www.rand.org/pubs/technical_reports/TR462.html

Teamwork and Patient Safety

This article emphasizes the crucial role of teamwork in creating a work environment that promotes patient safety and optimal care. Team training is identified as a key method for equipping healthcare teams with the necessary factors to work effectively. The article also points out that most quantitative evaluations fail to explain why and how team training is effective,

highlighting the need for deeper understanding and guidance for healthcare professionals interested in implementing such programs.

Link Between Teamwork and Patient Outcomes

The article highlights the important impact of teamwork on patient care and safety. With nearly 70% of sentinel events attributed to communication issues, improving teamwork is vital. A recent RAND report found evidence linking teamwork behaviors—such as coordination, mutual respect, role clarity, and shared goals—to improved clinical outcomes. These outcomes include reduced mortality rates, fewer cardiac arrests, and lower rates of complications. The growing understanding of this link has led healthcare providers and administrators to focus on optimizing teamwork, with team training becoming a widely adopted strategy.

Effectiveness of Team Training in Healthcare

The article supports the effectiveness of team training in improving patient safety and the work environment. Studies show that when designed systematically using the science of learning, team training equips healthcare providers with the knowledge, skills, and attitudes necessary for effective teamwork. Additionally, training allows for practice in a low-risk environment, providing constructive, nonjudgmental feedback to enhance both individual and team skills. This method fosters learning from mistakes and improves overall team performance.

Team training and Surgical Mindset

The concept of team training in healthcare directly connects to the "Surgical Mindset" by emphasizing the importance of effective teamwork, communication, and collaboration in high-stakes environments. Just as surgical teams rely on coordinated efforts to ensure patient safety and successful outcomes, the principles of team training focus on developing skills that enhance coordination, mutual respect, and shared goals. The ability to work seamlessly as a team, especially under pressure, mirrors the resilience and adaptability required in surgery. Just as a surgeon must be skilled in decision-making and problem-solving, team training fosters these competencies within the entire healthcare team, improving not only individual performance but also the overall effectiveness of surgical operations.

1. **“Educational value of surgical telementoring”** by A Butt K, Augestad KM. J Surg Oncol. 2021 [JSO-124-231.pdf](#)

Surgical Telementoring and Surgical Education

This article discusses the historical evolution of surgical telementoring. This approach has become essential as global challenges, such as the expanding world population and the need for efficient surgical education, have emerged. Surgical telementoring is seen as a solution to enhance surgeons' training through live video and audio feeds of the surgical field.

Connection to Surgical Training

The article highlights how surgical telementoring provides a new opportunity to bridge the gap in traditional surgical education. The Halstadian approach, which emphasizes hands-on training, has been challenged due to restrictions on working hours for residents and the limitations on international travel caused by the ongoing pandemic. As a result, telementoring has emerged as an alternative method that enables mentors to guide mentees remotely, overcoming geographical and temporal barriers. This approach aligns with the evolving needs in surgical education.

Importance for Surgeons and Mentees

Surgical telementoring is particularly beneficial for surgeons seeking individualized training in specific procedures in which they lack experience. The article emphasizes that mentees must meet prerequisites, such as board eligibility and enrollment in a relevant educational pathway, to benefit from this system. This ensures that the mentee has the necessary foundation to learn effectively through telementoring, making it a targeted and efficient form of surgical education.

Frameworks for Effective Telementoring Programs

The article also discusses the importance of conceptual frameworks in surgical telementoring programs. These frameworks help mentors place the curriculum in a broader context, aiding in the development of effective training programs. By adapting to these frameworks, surgical telementoring can be better planned and implemented, ensuring that it meets the educational goals and needs of both mentors and mentees in the surgical field.

2. **“A National Experiment Reveals Where a Growth Mindset Improves Achievement”**

by David S. Yeager, Paul Hanselman, Gregory M. Walton, Jared S. Murray, Robert Crosnoe etc.

[s41586-019-1466-y.pdf](#)

Growth Mindset and Surgical Mindset

This article highlights the importance of a growth mindset in education, which is closely related to the concept of the surgical mindset. Both mindsets emphasize learning from challenges and developing resilience. In surgery, adopting this perspective helps improve skills and outcomes by encouraging continuous learning and adaptation. Just as a growth mindset enhances students' academic progress, it also enables surgeons to refine their techniques and decision-making abilities throughout their careers.

Connection to Motivation

The article states that students who learned about the growth mindset demonstrated increased motivation, which directly connects to the perseverance needed in both education and surgery. Surgeons with a growth mindset are more likely to stay motivated during difficult cases and persist through setbacks. This mindset drives the desire to improve, which is essential for personal and professional growth in surgery.

Importance for Surgical Residents

The article's focus on how a growth mindset fosters perseverance and resilience can be particularly useful for surgical residents. Training to become a surgeon involves long hours, high stress, and constant learning. A growth mindset helps residents approach challenges as opportunities for growth, making their training more efficient and less overwhelming. This mindset can also contribute to better mental health by reducing feelings of frustration and failure.

Formal Resources in Surgical Training

Formal resources, such as training programs and mentorship, play a crucial role in fostering a growth mindset within surgical education. The article suggests that structured learning environments can encourage the development of this mindset. In surgery, formal resources like

residency programs, workshops, and feedback from experienced surgeons provide the necessary support for residents to build resilience, improve skills, and stay motivated through their training.

3. **“Medical students’ knowledge and attitude towards tele-education”** by Rorisa

Tadele Hailemariam, Araya Mesfin Nigatu, and Mequannent Sharew Melaku. 2022.

[12909_2023_Article_4579.pdf](#)

Tele-Education in Medicine

Tele-education refers to the use of information and communication technologies (ICTs) to deliver remote learning, allowing students and professionals to access educational materials and training sessions regardless of geographical location. This method has been employed in medical education to enhance the learning experience by utilizing technologies such as video conferencing, audio, and online courses. As the internet and digital resources evolve, tele-education has become an increasingly common tool in medical curricula, especially for basic sciences and foundational medical knowledge.

Use of Tele-Education in Surgical Training

Tele-education has proven to be a revolutionary tool in surgical training, offering a combination of remote simulation and live mentoring. Through video and interactive sessions, surgeons can engage in virtual consultations, receive feedback, and improve their techniques. This remote learning system supports the development of surgical skills by providing opportunities for practice in a controlled environment and receiving real-time guidance. Furthermore, tele-education can be integrated into clinical education, allowing medical students and residents to continue their training while maintaining their qualifications.

Connection to Surgical Mindset

Tele-education enhances the Surgical Mindset by fostering a continuous learning environment, which is fundamental for a surgeon's development. Just as the Surgical Mindset encourages resilience, adaptability, and self-reflection, tele-education promotes these qualities by providing flexible learning and real-time feedback. It allows learners to adapt their approaches based on new information and challenges, which is crucial for success in surgery. The ability to engage in

collaborative learning through remote platforms also aligns with the Surgical Mindset's emphasis on teamwork and shared knowledge, which are essential for patient-centered care.

4. "How to Develop the Mindset of a Surgeon?" by Ziv Simon. 2018.

[How to develop the mindset of a surgeon?](#)

Training and Practice for Aesthetic Surgery

Performing surgery in aesthetic zones requires extensive preparation, knowledge, and training. The first step is acquiring the proper education, whether through residency programs or courses. However, knowledge alone is not sufficient. Mistakes are part of the learning process, and gaining experience with complications, even failures, is crucial to improvement. It's essential to understand that without sufficient practice, even experienced dentists might not develop the necessary skills to handle aesthetic surgeries effectively.

Essential Mindset for Aesthetic Surgery

The mindset required to perform aesthetic surgery is fundamental to success in this field. It involves more than just technical skills; a doctor must have the right attitude and confidence to operate effectively in the aesthetic zone. This includes a big-picture view, where the doctor considers the surrounding tissues and overall health rather than focusing narrowly on the task at hand. Good communication with patients is essential to manage their expectations and to build rapport. Ensuring patients understand the potential challenges and limitations of aesthetic procedures can help create a more realistic outlook for the surgery.

Connection to Surgical Mindset

The mindset required for aesthetic surgery closely aligns with the Surgical Mindset, as it involves maintaining confidence, flexibility, and strong communication throughout the process. Just as a surgeon must be adaptable, dental professionals in aesthetic zones need to be flexible in their approach, recognizing when different strategies are needed. The ability to handle mistakes and learn from complications is essential in both fields, promoting resilience and



continuous growth. By applying the Surgical Mindset to aesthetic surgeries, healthcare professionals can improve their outcomes and better manage patient expectations.