

**Title:** "To strive or survive: An exploration of the meaning and inhibitors to thriving in surgery performance"

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14 Surgery is a highly-pressurized and high-stakes profession which draws parallels to industries  
15 such as elite sport and aviation. As a vocation, however it is dominated by surgical skill proficiency<sup>1</sup>  
16 and based within a resource constraint environment. There has been a dearth of research exploring  
17 positive psychological constructs in surgery when compared to other high-performance industries.

18 Vestiges of old cultural milieu within surgery, including perceptions of characteristics such as  
19 lower levels of neuroticism<sup>2</sup>, and higher levels of competitiveness<sup>3</sup> to survive in surgery likely  
20 contribute to current expectations and practices of performance regulation.

21 Thriving, broadly defined as the “joint experience of development and success”<sup>4</sup>, captures  
22 the experience of full functioning and can be observed via the concurrent subjective perceptions of  
23 high-level performance and well-being. Used frequently within sport psychology, it draws parallels  
24 to surgery and may influence surgical performance.

25 Our research team, with expertise in fatigue<sup>5</sup>, surgical performance<sup>6</sup> and elite sport  
26 performance<sup>7</sup> conducted semi-structured interview-based research, which is attached in supporting  
27 documentation, through purposive sampling with fourteen general surgeons (8 male, 6 female).  
28 Respondents were based in a single-tertiary hospital setting and were at residency and attending  
29 level. Self-reported meaning of ‘thriving’ in surgery and influencers were explored on post-interview  
30 anonymised transcripts by iteratively generating themes as used in the valid thematic analysis  
31 approach<sup>8</sup>. Methodological controls, attached in supported documentation were utilised to  
32 ensure rigor and trustworthiness of the data.

### 33 **Meaning**

34 When asked to discuss the meaning of and to define ‘thriving’ in surgery, it was evident from  
35 the participants’ responses that this was **difficult to conceptualise**. It was described as being linked  
36 with a **sense of achievement** or **excitement** in work, which ultimately increased their self-reported  
37 vitality. While not explicitly discussed as a meaning of thriving, the **ability to sustain ‘high-**  
38 **performance’** work was mentioned several times. The sense of thriving is implicitly influenced by  
39 **fragmented ‘happy moments’** in which surgeons perceive positivity in technical skill acquisition and

40 opportunities. Most notably, in the context of COVID-19, this became most prevalent as participants  
41 sense of fulfilment in their life was less present due to their lack of operative exposure.

## 42 **Inhibitors**

43 The most marked inhibitor to thriving in surgery reported by trainees and consultants was  
44 **sleep deprivation and fatigue**. While acknowledging that the amount of sleep they were able to get  
45 was not optimal, thoughts on sleep were influenced by professional attitudes such as the necessity  
46 for sleep being perceived as “*weak*” (P32) or being an indicator of insufficient engagement in their  
47 training. Although personal discipline in engaging in sleep hygiene techniques to offset risks of shift-  
48 work disorder were identified as potential enablers to allowing surgeons to thrive in their lives, such  
49 discipline currently did not exist in the profession. Participants reported a **resistance to change** due  
50 to an inertia to adapting due to poor resourcing, a sense they will miss exposure to training  
51 opportunities which they need and want, and perceived need to conform in order to progress.

52 Surgeons reported attitudes towards mental health and wellbeing being considered as an  
53 inhibitor of thriving. Thoughts about prioritising work meant some surgeons felt a ‘sense of failure’  
54 in both their personal and professional lives. Inhibiting thoughts reported by participants included  
55 general work-related anxieties and an inability to leave unfinished work responsibilities, and more  
56 specifically, internalised expectations of typically unrepresented groups such as women to “*strive*”  
57 (P30) to be harder in surgery. The overemphasis on work resulted in many surgeons not having  
58 developed **sufficient positive coping mechanisms** and social structures to engage with meaningfully  
59 in times of low-work in the theme of **not having non-work activities** with many identifying having a  
60 personal life outside work as being detrimental to career progression.

61 The theme of **culture** within surgery dominated a lot of the discussions with most surgeons  
62 identifying the existing rhetoric of healthcare management facilitating a system of comply and  
63 conform. As a result of this, surgeons over-work and find it difficult to prioritise non-work  
64 opportunities as an important rest strategy to optimise performance in the longer term. Participants  
65 discussed how compliance was also driven by perceptions of grandeur, power dynamics, and

66 bravado. Finally, peer pressure to 'conform' in what was identified as a "tribe" (P11) mentality  
67 amongst trainees meant that issues were not disclosed and that the rhetoric of learning through  
68 long-work hours as opposed to effective rest and performance management prevail.

69 Inhibiting thriving states was associated with work-factors such as insufficient staffing,  
70 inadequate remuneration for the additional hours work, and a need to comply with the working  
71 time directives dominate performance management, rather than try to make meaningful change to  
72 facilitate opportunities to thrive in work. Coupled with this, trainee surgeons noted the importance  
73 of *insufficient training exposure* impacting surgeons' livelihood by the necessity to continually  
74 access and integrate with new social agents in different placement locations.

## 75 **Recommendations**

76 Based on the above barriers, the authors have identified two overarching evidence-based  
77 recommendations for promoting thriving in surgery based off expertise and literature on thriving in  
78 other elite professional domains.

### 79 **1. Promoting Thriving by Changing a Culture**

- 80 (i) Within training institutions, developing the key competencies required to thrive in surgery  
81 can be facilitated by establishing a formal coaching or modelling programme from senior  
82 surgeons well versed in positive strategies for personal development.
- 83 (ii) Within hospitals, developing a 'just culture' of transparency and fairness, through initiatives  
84 such as human factors training and building known influencers of 'relatedness' such as trust  
85 and connectivity<sup>9</sup> allows 'psychological safety'<sup>10</sup> within systems to learn from error-making.

### 86 **2. Promoting Thriving by Promoting Fatigue Risk Management**

- 87 (i) Within institutions, modelling fatigue risk management systems (FRMS) from similar high-  
88 stakes industries is likely to positively impact thriving opportunities. Performance  
89 management frameworks should be developed by institutions in conjunction with input  
90 from surgeons to prevent, detect, and recover from fatigue inducing events and states of  
91 incapacitation to promote states of thriving.

- 92 (ii) Within teams, using appropriate behavioural change techniques informed by the principles  
93 of alertness management and performance protection<sup>11</sup>, such as training on fatigue  
94 management, and enablement with social and environmental engineering promotes 'fatigue  
95 proofing' in surgery and addresses misaligned personal attitudes and cognitions.
- 96 (iii) Nationally, a focus on work-rotas and improved human resourcing is required to facilitate  
97 improved working conditions which can tip the balance to performance optimisation in the  
98 profession.

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102 **References**

- 103 1. Moorthy K, Munz Y, Sarker SK, Darzi A. Objective assessment of technical skills in surgery. *Bmj*. 2003 Oct  
104 30;327(7422):1032-7.
- 105 2. McGreevy J, Wiebe D. A preliminary measurement of the surgical personality. *The American Journal of surgery*.  
106 2002 Aug 1;184(2):121-5.
- 107 3. Schwartz RW, Barclay JR, Harrell PL, Murphy AE, Jarecky RK, Donnelly MB. Defining the surgical personality: a  
108 preliminary study. *Surgery*. 1994 Jan 1;115(1):62-8.
- 109 4. Brown DJ, Arnold R, Fletcher D, Standage M. Human thriving. *European Psychologist*. 2017 Sep 7.
- 110 5. Whelehan D, Alexander M, Ridgway PF. Would you allow a sleepy surgeon operate on you? A Narrative Review.  
111 *Sleep Medicine Reviews*. 2020 May 13:101341.
- 112 6. Whelehan D, McCarrick CA, Ridgway PF. A systematic review of sleep deprivation and technical skill in surgery.  
113 *The Surgeon*. 2020 February.
- 114 7. Brown DJ, Fletcher D. Effects of psychological and psychosocial interventions on sport performance: A meta-  
115 analysis. *Sports Medicine*. 2018 47 (1): 77-99.
- 116 8. Clarke V, Braun V, Hayfield N. Thematic Analysis. I Smith, JA (Red.). *Qualitative psychology: A practical guide to*  
117 *research methods*. 2015:222-48.
- 118 9. Carmeli A, Spreitzer GM. Trust, connectivity, and thriving: Implications for innovative behaviors at work. *The*  
119 *Journal of Creative Behavior*. 2009 Sep;43(3):169-91.

- 120 10. Carmeli A, Gittell JH. High-quality relationships, psychological safety, and learning from failures in work  
121 organizations. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and*  
122 *Organizational Psychology and Behavior*. 2009 Aug;30(6):709-29.
- 123 11. Mawhin B, Cabon P, Buratto F, Quillaud A. Developing resilience engineering principles for design: the case of  
124 pilot's incapacitation in civil aviation. In *Proceedings of the 2012 Conference on Ergonomie et Interaction homme-*  
125 *machine* 2012 Oct 16 (pp. 201-204).
- 126