



# Considerations for designing and implementing a surgical peer coaching program: an international survey

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## Abstract

**Background** Surgical peer coaching has been associated with high rates of practice change but remains largely unutilized. The purpose of this study was to survey surgeons internationally to investigate attitudes regarding peer coaching and to identify any international differences to inform the design of future coaching programs.

**Methods** Practicing surgeons in general surgery or related subspecialties were eligible to participate. Invitations to complete the survey were distributed through 13 surgical associations, social media, and personal e-mail invitations. Responses were obtained between June 1st and August 31st, 2020.

**Results** A total of 521 surveys were collected. The majority of participants practiced in North America (263; 50%) with remaining respondents from Asia (81; 16%), Europe (34; 7%), South America (21; 4%), Africa (17; 3%), and Oceania (6; 1%). Duration of practice was equally distributed across 4 intervals (0–5 years; 6–15 years; 16–25 years; > 25 years). Respondents most frequently identified as general surgeons (290; 67%) and 325 (75%) were male. Awareness of peer coaching was reported by 275 (53%) respondents, with 197 (44%) never seeking formal feedback from peers. The majority of respondents (372; 84%) would be willing to participate in a peer coaching program, with monthly interactions the most desirable frequency reported (193; 51%). Coaching in the operating room was preferred by most participants (360; 86%). Few respondents (67; 14%) would accept coaching from someone unknown to them. Participants identified key coaching program elements as: feedback kept private and confidential (267; 63%); opportunity to provide feedback to the coach (247; 59%); personalized goal setting (244; 58%); and the option to choose one's own coach (205; 49%). The most commonly cited potential barrier to participation was logistical constraints (334; 79%).

**Conclusion** This international survey of practicing surgeons demonstrated that peer feedback is rarely used in practice, but there is high interest and acceptance of the peer coaching model for continuous professional development. Findings regarding preferred program structure may be useful to inform the design of future peer coaching programs.

**Keywords** Surgical coaching · Continuous professional development · Peer feedback · International survey

The need for ongoing skills development is well recognized in surgery. During training, surgical residents benefit

from senior surgeons' teaching and feedback to achieve proficiency and gain competence [1–3]. Once training has ended, however, surgeons are responsible for maintaining and advancing their skills independently with few opportunities for formalized feedback from experienced peers.

Recently, peer coaching has gained popularity as a novel continuing professional development (CPD) modality that allows for individualized feedback for surgeons in practice. Peer coaching establishes a coach–coachee partnership structured around analysis, self-reflection, and feedback to improve performance [4]. Recent studies have shown surgical coaching is feasible and positively perceived [5–7]. Furthermore, peer coaching seems to translate into a rate of

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real practice change of 85–100% [7], substantially higher than that achieved by traditional, more passive, CPD activities such as lectures and reading the literature [8, 9]. These results have led to enthusiasm for greater peer coaching utilization for CPD among surgeons in practice [6, 10].

Despite these positive findings, peer coaching remains mostly confined to the research arena. Small North American studies have identified potential barriers to peer coaching utilization that include fear of judgment and loss of autonomy, lack of time, logistical constraints, remuneration concerns, and a perceived lack of need for this modality compared to traditional CPD activities [7, 11]. Successful planning and implementation of peer coaching programs will require a better understanding of the baseline receptivity to, awareness of, and perceived needs for peer coaching among surgeons globally.

Therefore, the purpose of this study was to survey surgeons internationally to investigate attitudes regarding peer coaching and to identify any international differences to better inform the design of future coaching programs.

## Methods

### Survey design

An online survey was created according to recommended guidelines [12] using a secure platform capable of capturing anonymous responses (SurveyMonkey Inc., Palo Alto, CA) and results were tabulated according to the Checklist for Reporting Results of Internet E-Surveys [13].

Questions were developed using an iterative process based on a framework for coaching program implementation developed from previous studies by our group [7, 11]. Survey questions were organized around the following three themes: (a) optimal program structure, (b) benefits and motivations, and (c) potential barriers to coaching participation. Questions were reviewed by three surgeons from the research team (Supplementary Appendix 1), then translated into Spanish by a native speaker, and then reviewed for clarity by a second native speaker. Baseline demographic information about participants was also collected.

### Participant recruitment

Responses were collected between June 1 and August 31, 2020. All surgeons in specialties recognized by the American Board of Surgeons were eligible for study enrollment. Invitations to participate were sent by e-mail or social media by 14 international surgical societies and disseminated through the personal contacts of all the study authors. The survey link was also posted to surgical groups on Facebook and Twitter. Respondents were then asked to disseminate the

survey among their colleagues in a snowballing recruitment strategy. Participation was entirely voluntary and responses were collected anonymously.

### Definitions

To ensure a homogeneous understanding of terms, we included two definitions within the questionnaire:

*Coaching* was defined as “a process whereby an experienced and trusted role model, advisor, or friend guide another individual in the development or self-reflection of ideas, learning, and professional development, working with mutual goals and providing support for changes in practice” [7].

*Formal feedback* was defined as “structured, planned feedback according to predefined goals” [14].

### Data collection

This survey was conducted via SurveyMonkey, a web-based survey platform, which stores data securely in compliance with HIPAA (health insurance portability and accountability act) regulations. All data were collected anonymously. Participants received a survey link by e-mail or social media and completed the survey without IP (internet protocol) tracking, which was automatically sent to the SurveyMonkey database when finalized. Participants were informed about the study purpose, provided with the contact to the primary investigator, and notified that the survey was strictly confidential and anonymous and consent for participation was implied with participation.

### Data analysis

Data were downloaded from SurveyMonkey for statistical analysis. Results were grouped according to practice location by continent and years in practice. Descriptive statistics were used to report survey answers. All responses were included in the analysis. Results are reported as number (percent) unless otherwise specified. Percentages are based on the number of responses to each question; thus, the denominator is not always the same.

## Results

### Participant demographics

A total of 521 responses from 39 countries were collected, with 422 (81%) surveys completed entirely. Response rate could not be calculated as the exact number of surgeons who received the link could not be counted. Half of the participants were from North America (260, 50%), with the

second-highest representation from Asia (81, 16%) (Fig. 1). The most common practice setting was a university-affiliated hospital (135, 32%). Most respondents were male (324, 75%) and a majority (290, 67%) listed general surgery as their specialty designation. Participant characteristics are presented in Table 1.

Just over half of participants had heard of surgical coaching before participating in this survey (275, 53%; North America 161, 61%; Asia 34, 42%; South America 11, 52%; Europe 17, 50%; Africa 8, 47%; Oceania 4, 66%; NA 40, 8%), with an equal distribution among years in practice. A large majority expressed interest in participating in a coaching program (372, 84%; North America 217, 83%; Asia 69, 85%; South America 19, 90%; Europe 29, 85%; Africa 17, 100%; Oceania 5, 83%) and providing coaching (358, 84%; North America 220, 84%; Asia 68, 84%; South America 19, 90%; Europe 26, 76%; Africa 16, 94%; Oceania 5, 83%) as part of a formalized program. Only 15 respondents (3%; North America 10, 67%; Asia 3, 20%; South America 1, 7%; NA 1, 7%) reported having no interest in participating in a coaching program.

### Current continuous professional development strategies

The most common CPD modalities currently employed by participants were as follows: attending hands-on courses (321, 62%), attending conferences (286, 55%), reading journals (246, 48%), watching edited videos posted by others

(203, 39%), reviewing their own outcomes (191, 37%), and observing colleagues in the OR at the same institution (169, 32%). CPD use by modality and frequency is reported in Table 2. Most participants never review their own videos with a colleague (363, 70%) and just over half never do so independently (273, 52%). A minority of surgeons never attend hands-on courses (125, 24%), review surgical outcomes (56, 11%), or observe colleagues in the operating room (OR) at other hospitals (50, 10%).

With respect to operating jointly with another surgeon, this most frequently occurred among survey respondents for only complex cases (222, 46%; North America 97, 37%; Asia 49, 61%; South America 12, 57%; Europe 19, 56%; Africa 10, 59%; Oceania 3, 50%), with 19 (4%; North America 13, 5%; Asia 2, 2%; Europe 1, 3%) responding that they never operate with a colleague and 93 respondents (20%; North America 64, 24%; Asia 12, 15%; South America 5, 24%; Europe 5, 15%) reported operating with a colleague in all cases. When co-surgery cases did occur, less than a third (82, 28%) of participants reported providing unstructured or unsolicited feedback to colleagues “most of the time,” while the majority provided feedback “occasionally” or “every time” (84, 28%; 78, 27%) (Fig. 2).

One hundred and fifty-nine (31%, North America 81, 31%; Asia 24, 30%; South America 4, 19%; Europe 9, 26%; Africa 6, 35%; Oceania 2, 33%) respondents reported being required to submit to formalized assessments by local licensing authorities. The most common time frame for undergoing these assessments was between 1 and 5 years in practice

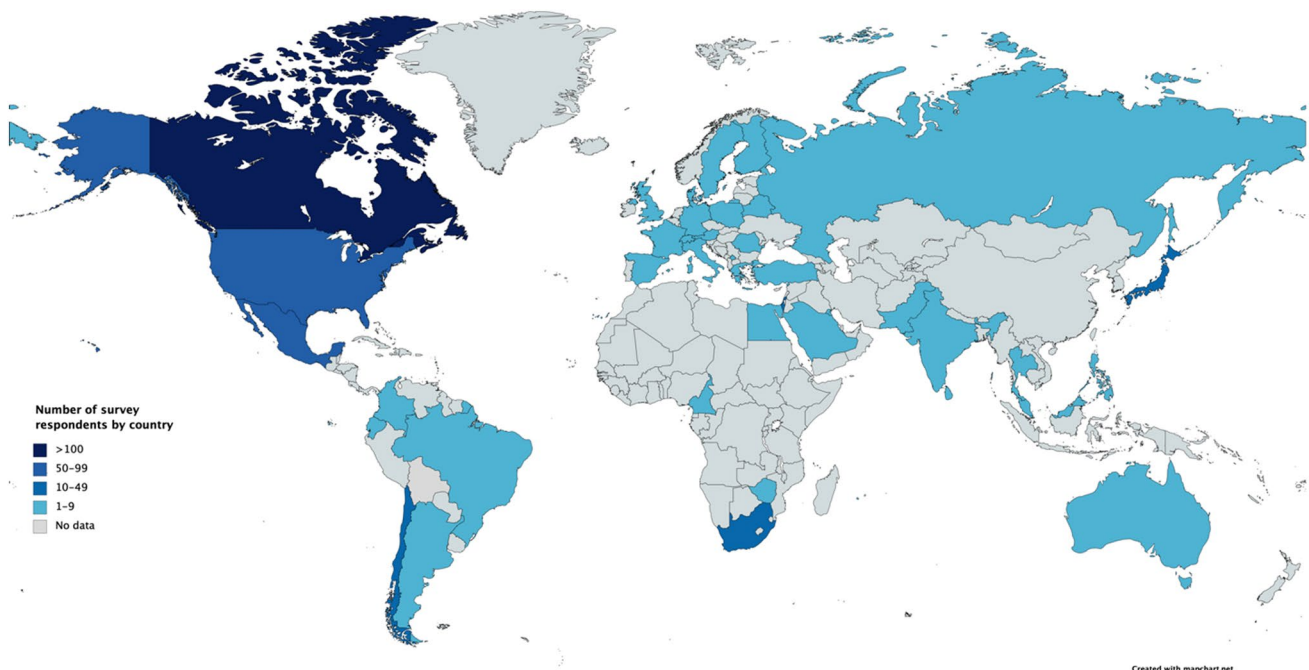


Fig. 1 Number of survey responses by country

**Table 1** Participant characteristics (99 respondents did not provide demographic data)

Characteristics	Number (%)
Years in practice	
0–5	107 (25%)
6–15	106 (25%)
16–25	98 (23%)
> 25	111 (27%)
Sex	
Female	96 (22%)
Male	324 (75%)
Not disclosed	10 (2%)
Continent	
North America	263 (50%)
Asia	81 (16%)
Europe	34 (7%)
South America	21 (4%)
Africa	17 (3%)
Oceania	6 (1%)
Practice type	
Community private	89 (21%)
Community public	46 (11%)
University affiliated	179 (42%)
Academic full time	95 (23%)
Sabbatical/retired	9 (2%)
Military	5 (1%)
Specialty	
General surgery	290 (67%)
Colorectal surgery	19 (4%)
Surgical oncology	15 (3%)
Cardiothoracic surgery	14 (3%)
Vascular surgery	12 (3%)
Bariatric surgery	3 (1%)
Pediatric surgery	9 (2%)
Trauma	2 (0.5%)
Minimally invasive surgery	2 (0.5%)
Plastic surgery	19 (4%)
Otolaryngology	10 (2%)
Orthopedics	11 (3%)
Neurosurgery	7 (2%)
Obstetrics and gynecology	7 (2%)
Urology	6 (1%)
Ophthalmology	4 (1%)
Fellowship training	
Yes	300 (70%)
No	130 (32%)

(53, 37%). Formalized assessments are required most frequently by the hospital (122, 82%), a professional licensing board (96, 65%), and the government (28, 19%); this most commonly takes the form of a continuous professional

development credit system (91, 61%), maintaining certification in specific programs (89, 60%) and structured hospital performance reviews (61, 41%).

When asked how they view peer coaching in comparison to existing CPD modalities, the majority believed peer coaching to be more expensive (237, 56%) and less convenient (210, 50%), but also more fun (330, 78%), more patient-centered (297, 70%), and more practical (373, 88%) (Fig. 3).

### Preferred program structure

Questions regarding participants' preferences around peer coaching program structure were organized according to program format, location, and coaching relationship.

#### Program format

Elements that were selected by over half of respondents regarding the design and timing of a peer coaching program included: having personal meetings with the coach to discuss their goals (285, 68%), receiving formalized feedback for personal use (267, 63%), having the ability to provide feedback to the coach (247, 59%), being allowed to set your own goals (244, 58%), and being able to change coaches if conflicts arise (235, 56%). Somewhat less commonly endorsed items included: being allowed to choose one's coach (205, 49%), receiving CME credits (2017, 49%), allowing the coach to define some of the goals (192, 46%), and being allowed to set the frequency and length of the interactions (170, 40%). Elements felt to be less important for participants included: receiving formalized evaluation for promotions (106, 25%), having the frequency and length of interactions predefined (115, 27%), receiving formalized feedback for review by the department chair (73, 17%), being able to decline assignment of a coach (1, 0.5%), having the coach scrub in to assist with procedures (1, 0.5%), to be able to set expectations for each session (1, 0.5%), and to have it be private and not seem like a penalty (1, 0.5%).

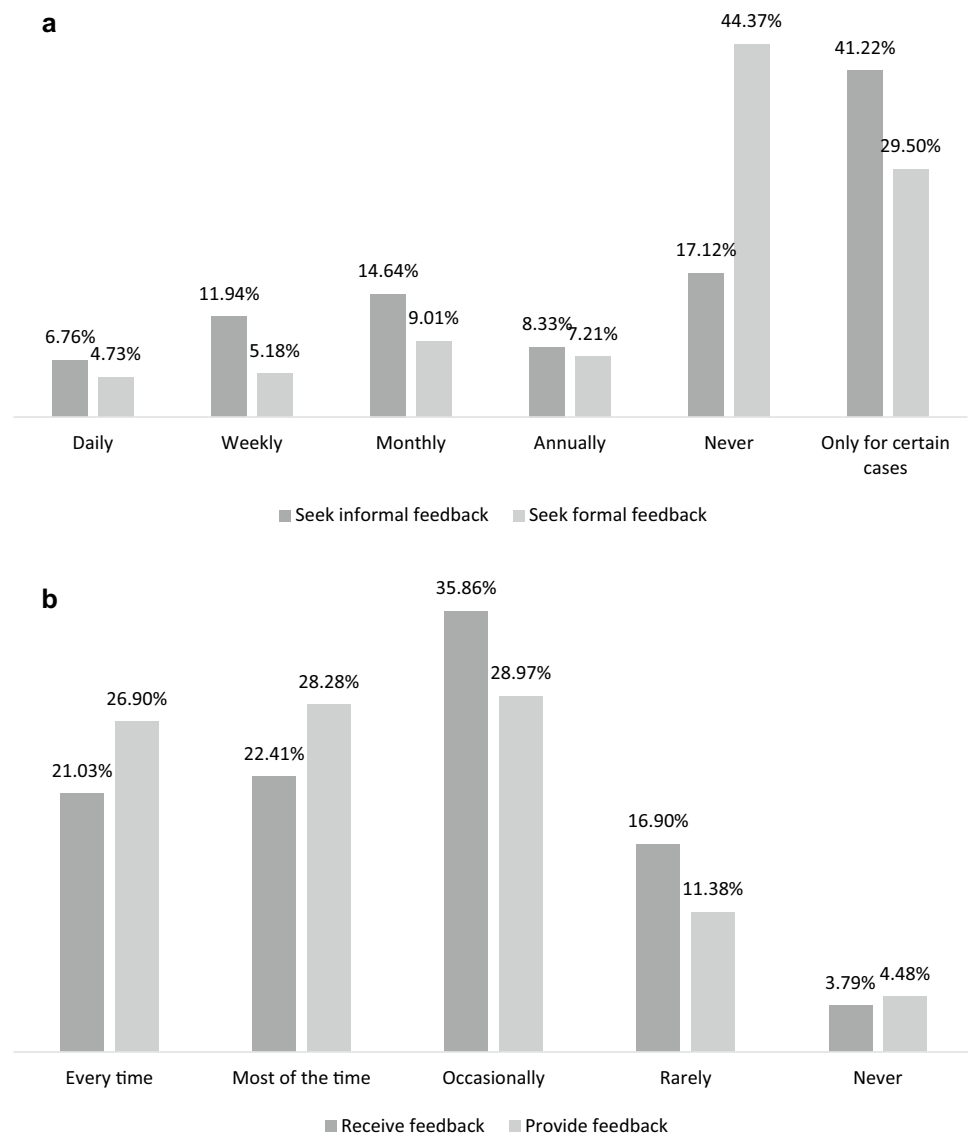
Concerning the number and frequency of interactions, most participants agreed the number of total interactions should be planned according to the learning goals (232, 55%), with ad hoc scheduling depending on needs and progress being the most frequently selected option (167, 40%). Very few respondents felt a single interaction would be sufficient (22, 5%). In terms of frequency, the most popular interval chosen was monthly interactions (193, 51%) (Table 3).

#### Location

The most popular venue for coaching among respondents was live in the OR (360, 86%), followed by post hoc review of pre-recorded videos (263, 62%) and simulator-based coaching (143, 34%) (Table 3).

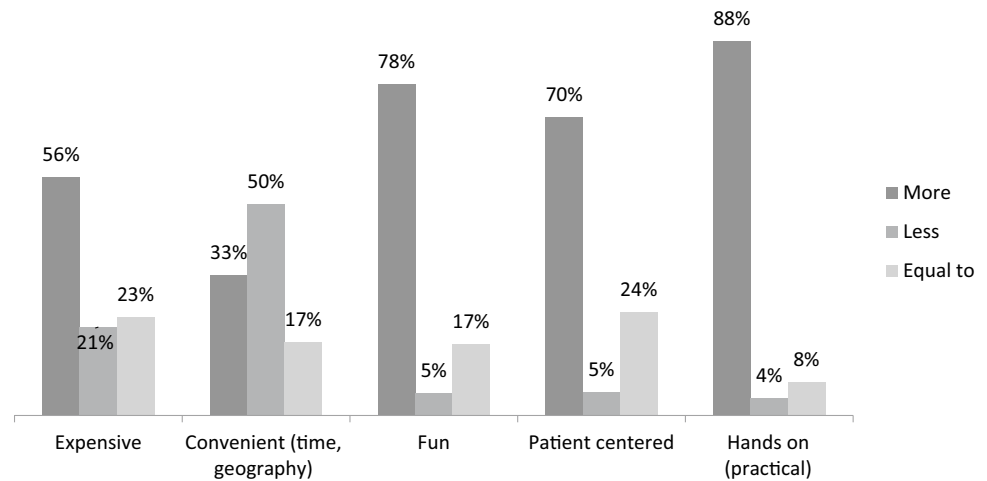
**Table 2** CPD use by modality and frequency *n* (%)

CPD modality	Daily	Weekly	Monthly	Annually	Never
Reading peer-reviewed journals	93 (18%)	246 (47%)	157 (30%)	17 (3%)	4 (1%)
Watching edited videos posted by other surgeons	42 (8%)	151 (29%)	203 (39%)	78 (15%)	43 (8%)
Attending meetings/conferences	22 (4%)	108 (21%)	97 (19%)	286 (55%)	4 (1%)
Participating in hands-on technical skills courses	9 (2%)	13 (2%)	46 (9%)	321 (62%)	125 (24%)
Participating in morbidity and mortality conferences in my own institution	0	0	3 (1%)	0	0
Reviewing my surgical outcomes	69 (13%)	92 (18%)	191 (37%)	113 (22%)	56 (11%)
Reviewing my own videos independently	15 (3%)	58 (11%)	99 (19%)	73 (14%)	273 (52%)
Reviewing my own videos with a knowledgeable colleague	7 (1%)	19 (4%)	61 (12%)	68 (13%)	363 (70%)
Observing or assisting other surgeons in the OR	92 (18%)	169 (32%)	136 (26%)	74 (14%)	50 (10%)
Observing or assisting other surgeons in the OR outside my institution	0	1 (0.2%)	1 (0.2%)	0	1 (0.2%)

**Fig. 2** Frequency and type of peer feedback currently sought (a) and received (b) by study respondents



**Fig. 3** Participants perception to coaching compared to other CPD modalities



**Table 3** Number of responses to questions about location, timing, and number of interactions

Program element	Responses <i>n</i> (%)
<b>Location of interaction</b>	
OR live	360 (86%)
Recorded videos	263 (62%)
Simulation	143 (34%)
Others	14 (3%)
<b>Timing of interactions</b>	
Monthly	193 (51%)
Annually	75 (20%)
Weekly	86 (23%)
One time only	11 (3%)
Daily	6 (2%)
<b>Number of interactions</b>	
Pre-established	232 (55%)
Ad hoc	167 (40%)
One time	22 (5%)

### Coaching relationship

Regarding the coach's identity, only 67 (14%) respondents said they would be willing to be coached by a stranger. The majority preferred to be coached by someone they already knew or knew of (381, 86%) and most felt having some knowledge of the coach's skills and expertise would be essential (353, 80%). A small number would prefer to be coached by a friend (96, 22%) or a mentor (131, 30%). Relative age of the coach was not overly important to the majority of respondents, with 301 (68%) selecting "neither agree nor disagree" to the statement "If someone were going to give me feedback in the OR, I would prefer they be a younger surgeon with new skills" and 243 (55%) for

"If someone were going to give me feedback in the OR, I would prefer to they be one of my mentors/teachers (older than me)".

### Benefits and motivations for coaching participation

Most participants expressed interest in participating in coaching to improve patient care, including learning new techniques (362, 86%) and refining existing ones (345, 82%). Improving surgical outcomes and patient safety was also common motivators for participation (337, 80%; 318, 75%, respectively), followed by increasing one's confidence (248, 59%), networking with other surgeons (251, 59%), and for personal enjoyment (246, 58%). Less popular motivators included to achieve expert performance (123, 39%), to receive CME credits (163, 39%), and to travel (152, 39%). Receiving remuneration was not a motivator for coaching participation among most survey respondents (80, 19%).

### Barriers to coaching participation

The most common potential barriers to peer coaching participation revolved around logistical constraints such as scheduling conflicts (304, 68%), remuneration issues (104, 23%), lack of expertise in their institution (81, 18%), low case numbers in their institution (78, 18%), geographical distance (77, 17%), and credentialing problems (59, 13%).

Barriers relating to surgical culture and acceptance of coaching were cited. These included competition issues among colleagues (59, 13%), the risk of appearing unskilled or underqualified (46, 10%), the risk of receiving unpleasant feedback (25, 6%), and fear of losing control over the OR (23, 5%). Similarly, issues relating to perceived lack of need were infrequently viewed as barriers. Few participants felt they had enough learning opportunities elsewhere (34, 8%),

already learnt from the residents or fellows (14, 3%), or do not require any feedback (9, 2%).

In response to open-ended questions regarding barriers to coaching participation, taking opportunities away from residents was mentioned on three occasions (1%), “ego” was cited twice (0.5%) and one participant stated, “if I felt he could do it better, I would refer the patient to him”.

### Geographical variations

Variability in the number of responses between geographical locations precluded statistical comparisons. However, there were no obvious differences in program design preferences between respondents from North America and the rest of the world. All participants prefer live OR coaching; however, there is a slight difference in preference for the use of video coaching outside of North America. Additionally, all participants prefer having a set number of scheduled sessions, but North American participants also advocate for ad hoc sessions. Finally, most participants worldwide prefer monthly sessions and participants outside of North America seem to be keen to weekly sessions (Supplementary Table S1).

Responses based on years in practice and practice location are available in Supplementary Tables S2 and S3.

### Characteristics of non-interested respondents

Only 15 participants (3%) expressed limited or no interest in participating in a coaching program. Of these, 14 (93%) were males and seven (47%) stated they would not be a coachee but would be willing to coach someone else. Four (27%) would not participate in any way, two (13%) would be a coachee but not a coach, and two (13%) would not be a coachee but would be a coach if the program structure permitted.

Logistical constraints (8, 53%) were cited as the most important barrier for not wanting to participate, followed by a perceived lack of need (2, 13%) and fear of appearing unskilled or unqualified (1, 7%). Four (27%) participants did not report a barrier to participation. When asked how they perceived coaching compared to other modalities, answers were more expensive (4, 57%), less convenient (4, 57%), less fun (3, 43%), less hands-on (3, 43%), and less patient-centered (2, 28%).

### Discussion

This study reports the results of an international survey on the opinions and preferences of practicing general surgeons and related surgical subspecialists regarding peer coaching for continuous professional development. This is the first

study to explore this topic internationally. The participants expressed an openness to peer coaching with no regional differences. Results of this survey can be used to inform the development of successful peer coaching programs in the future.

Effective continuing professional development is essential for surgeons to maintain a high quality practice and to incorporate new procedures and techniques over the duration of their professional careers. According to our results, only a small percentage of surgeons are required to undergo formalized reassessments of surgical competency after their initial certification; most countries utilize some form of credit system for maintenance of certification or practice privileges [15, 16].

Most traditional CPD activities rely on passive learning, such as journal reading, attending lectures, and watching videos created by others. These activities typically result in essentially negligible real practice changes [9, 17, 18]. As expected, most respondents to this global survey reported most often utilizing traditional CPD modalities. The most commonly used interactive modality was attending hands-on courses, usually once per year. Only a small percentage of survey respondents currently participate in interactive co-learning activities with another surgeon, such as scrubbing together in the OR or reviewing videos with colleagues. The percentage of surgeons in this sample who regularly sought out and received formal feedback was small. Despite the substantial advantages of interactive learning strategies over more passive CPD activities, these remain largely underutilized. Peer coaching for continuous professional development has been shown to result in durable changes in practice [7]. This is believed to be because this learning modality involves individualized, timely feedback per the learner’s goals and current skill sets and is highly interactive [19, 20]. Our results show that the opportunity to receive CPD credits would be a motivator to participate in a peer coaching program.

Our survey results are encouraging, as the large majority of respondents expressed an interest and openness to participating in coaching, both as the coach and the coachee. The most commonly cited potential barriers to participation were logistical, such as scheduling issues, credentialing, and case availability, rather than cultural barriers as reported in previous studies [11, 21]. Few respondents to this survey expressed fears of judgment by peers or the risk of seeming incompetent as perceived barriers to participation in coaching programs, supporting that awareness and acceptance of peer coaching may be changing in surgery. These results are encouraging, and future peer coaching programs may benefit from this change in climate by seeing greater uptake and enrollment, especially if professional bodies offer significant CPD credit for these activities.

Program design will be an essential factor to ensure participation and engagement. While other studies had already established that goal setting, personalized feedback, and longitudinal interactions are particularly important to improving practice change rates [22], our study also found that potential participants had clear preferences concerning certain structural aspects, such as characteristics of the coach, being able to set their own goals, being able to provide feedback to the coach, having the liberty to change coaches, flexibility of scheduling, and location of the interaction.

While video-based coaching has been shown to be effective and feasible [23, 24], respondents to this survey overwhelmingly favored in-person live coaching in the operating room. This format has greater logistical hurdles to overcome, such as scheduling and credentialing issues, and widespread use may be limited compared to coaching interactions that can be done remotely and after the surgery. However, participants' preferences for live coaching might reflect the fact that many surgeries are not amenable to video recording or that there are aspects of the conduct of an operation such as communication, planning, and preparation [25] that are not easily captured by review of a video alone. Presumably, as peer coaching gains acceptance, various program formats will emerge, both live and virtual, to meet surgeons' different goals and needs in different contexts. Furthermore, due to the global limitations on travel and continued reliance on virtual communication platforms to replace in-person meetings, the acceptance of virtual coaching may continue to increase.

The importance of establishing rapport and cultivating mutual trust between coach and coachee has been demonstrated in previous studies [26–29], and the results of this survey support this. Most participants preferred to have a known colleague, chosen or accepted by them, as a coach. Participants also expressed a preference for knowing the skills and reputation of their coach. While none of our questions aimed to understand the ideal characteristics necessary to become a coach, recent studies have reported that coaching skills, in any area but particularly in surgery, are not innate and therefore must be taught and practiced [27, 30].

Limitations of this study include the sampling strategy and the possibility that respondents were self-selected to be interested in coaching, while those who are uninterested simply did not participate. This is an inherent limitation of all surveys and is a trade-off to collect a large number of responses in a reasonable time frame. By disseminating the survey through numerous different international surgical societies, social media platforms, and direct e-mail, the opportunity to participate was disseminated to a large and varied cohort. While the survey received responses from surgeons internationally just over half hailed from North America. This may limit the generalizability of the results and hindered our ability to perform in-depth statistical

comparison by continent of practice. However, given the similarity of responses across regions, it is questionable whether greater representation from other regions would have meaningfully changed the results. The survey was designed in English and translated only into Spanish. While we explored translating it into more languages, most contacts at surgical associations globally felt their membership would be comfortable answering the survey in English. However, this may have impacted the response rate from other regions. Also, the survey was launched when most countries were recuperating from the first wave of COVID-19, which could have impacted the time and motivation surgeons had to participate.

## Conclusion

This international survey of practicing surgeons demonstrated that peer feedback is rarely used in practice, but there is a very high interest and acceptance of the peer coaching model for continuous professional development globally. Findings regarding preferred program structure may be useful to inform the design of future peer coaching programs.

**Supplementary Information** The online version contains supplementary material available at <https://doi.org/10.1007/s00464-021-08760-z>.

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## Declarations

**Disclosures** Sofia Valanci-Aroesty, Liane S Feldman Julio F Fiore, Lawrence Lee, Gerald M Fried, Carmen L Mueller have no conflicts of interest or financial ties to disclose.

**Ethical approval** The research protocol was approved by the Institutional Review Board at McGill University.

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