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### Title

Self-development Tools Utilized by Plastic Surgeons: A Survey of ASPS Members.

### Permalink

<https://escholarship.org/uc/item/1q056787>

### Journal

Plastic and Reconstructive Surgery, Global Open, 9(5)

### ISSN

2169-7574

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### Publication Date

2021-05-01

### DOI

10.1097/GOX.00000000000003527

Peer reviewed

# Self-development Tools Utilized by Plastic Surgeons: A Survey of ASPS Members

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**Background:** The plastic surgery literature is devoid of research on the topic of professional development tools that may be used to enhance performance as a plastic surgeon. After an extensive review of the medical literature, we selected the most frequently referenced professional development tools utilized by plastic surgeons, which included the following: goal setting, positive visualization, scheduled practice, critically analyzing mistakes, professional development conferences, involvement in sports, motivational videos, podcasts & audiobooks, daily morning routines, self-development books, and advice from mentors.

**Methods:** A 10-question survey was sent to 2542 members of the American Society of Plastic Surgeons (ASPS). The algorithm used to select ASPS members to survey was based on member demographics that would best reflect the views of the entire active society membership. Responses were compared based on demographic factors such as type of practice, gender, and age.

**Results:** A total of 286/2542 (11.25%) ASPS members participated in the survey. Analyzing mistakes (96.3%), goal setting (88.51%), and advice from mentors (85.2%) were most commonly attributed to self-development. Respondents in an academic practice favored conferences and advice from mentors. Participants in a solo practice favored self-help books and morning routines. No statistical differences were observed based on training background.

**Conclusions:** ASPS members attribute their professional development to setting measurable goals, carefully analyzing surgical mistakes, and guidance from mentors. This information opens the door for continued analysis of professional development within plastic surgery as well as supplement training practices at the resident and post-graduate level. (*Plast Reconstr Surg Glob Open* 2021;9:e3527; doi: 10.1097/GOX.0000000000003527; Published online 24 May 2021.)

## INTRODUCTION

Upon review of the literature, there are various studies aimed at identifying personality traits commonly found in surgeons.<sup>1-4</sup> According to Hoffman et al, surgeons are more likely to demonstrate conscientiousness, extraversion, and emotional stability.<sup>2</sup> Furthermore, there is published work analyzing the variables associated with career satisfaction in the fields of general surgery,<sup>5</sup> otolaryngology,<sup>6</sup> and orthopedic surgery.<sup>7</sup> They conclude that factors

such as personality, attitude, grit, training experience,<sup>5</sup> predictors of success in residency training,<sup>6</sup> and extra-curricular involvement were notably influential in the development of a successful practice.<sup>7</sup>

The plastic surgery literature is devoid of research on the topic of professional development and the associated methods used to facilitate growth within the field. The closest published study to date attributes self-reported professional success to traits such as hard work, compassion, and manual dexterity.<sup>8</sup> Although this previous work correlates certain behavioral traits to success, it does not identify the methods used by the plastic surgeon to develop their success. As interest in professional development continues to grow across the medical field, we look to identify the tools or practices most favored by our plastic surgery colleagues from all practice types. Even at the trainee level, there is a growing interest in the concept

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DOI: 10.1097/GOX.0000000000003527

**Disclosure:** All the authors have no financial interest to declare in relation to the content of this article.

Related Digital Media are available in the full-text version of the article on [www.PRSGlobalOpen.com](http://www.PRSGlobalOpen.com).

of professional development. To highlight this point, an article published by Kuo et al describes the successful implementation of a professional development course for surgical residents, with an emphasis on public speaking, leadership training, and financial planning through the use of personal development books, videos, conferences, and prerecorded lectures.<sup>9</sup>

After an extensive review of the literature, there have not been any validated or standardized self-development tools linked to professional growth in surgery. We have identified several self-development tools and practices that have been most frequently referenced in the current medical and nonmedical literature. These include concepts of goal setting,<sup>10-14</sup> positive visualization,<sup>15-18</sup> scheduled practice,<sup>19,20</sup> critically analyzing mistakes,<sup>21,22</sup> professional development conferences,<sup>23-26</sup> involvement in sports,<sup>27-29</sup> motivational videos,<sup>30-33</sup> podcasts & audiobooks,<sup>34,35</sup> daily morning routines,<sup>36-38</sup> self-development books,<sup>35,39</sup> and advice from mentors.<sup>21,40</sup> Goal setting has been linked to improved self-efficacy and confidence as well as an increased likelihood of attaining desired outcomes.<sup>10-13,41</sup> Visualization and self-affirmation has been shown to modulate stress responses and improve performance in sports.<sup>15-18</sup> Daily practice and repetition of tasks are frequently taught to achieve a mastery of skills in medical and surgical training.<sup>42-47</sup> Studies have demonstrated that individuals who listen to motivational videos and music while training can perform for longer periods of time and have improved tolerance of high-stress environments.<sup>30</sup> Moreover, motivational videos have been shown to inspire individuals to achieve a greater degree of emotional control.<sup>48,49</sup> A study of over 7,000 US surgeons by Shanafelt et al showed that positive visualization and involvement in sports plays a significant role in professional development and prevention of burnout.<sup>50</sup> Table 1 showcases the definitions of each of the professional development tools utilized in this survey of ASPS members. In this study, we surveyed members of the American Society of Plastic Surgeons (ASPS) to determine which development tools were most influential in promoting professional development as a plastic surgeon.

## METHODS

The survey was designed following an in-depth review of the medical and non-medical literature and outlines most effective self-development tools used for personal and professional development. Following a review by the ASPS leadership, the survey was sent out 3 times to a cohort of 2542 ASPS member surgeons. The algorithm in selecting representative ASPS members to survey was executed by the ASPS Survey Services Office. This was based on demographics that would best reflect the views of the entire active society membership.<sup>51</sup> The authors were blinded to this selection process.

The respondents were asked to rate the importance of commonly used personal development tools to facilitate career growth. Survey participants were asked to select between (not at all important, slightly important, important, fairly important, and very important) personal development tools, or do not personally apply for

**Table 1. Definition of the Professional Development Tools Included in the Survey of ASPS Members**

Personal Development Tool	Definition
Goal Setting	Conscious process of setting a specific desired outcome.
Positive visualization	Visualizing the achievement of a desired outcome in one's mind before attaining it.
Scheduled practice	Conscious and disciplined action of practicing a specific skill on a scheduled basis.
Critically analyzing mistakes	Identifying the specific factors that led to a mistake as a means to decrease the chances of making the same mistake again.
Professional development conferences	Organized gatherings focused on networking and learning about a particular topic or skill.
Involvement in sports	The act of practicing either an individual or team sport at any stage in life.
Motivation videos	Videos composed of sets of images, phrases, and affirmations that seek to motivate individuals to perform at a higher level.
Self-development podcasts	Prerecorded audio episodes centered around self-development topics or skills.
Self-development books/audiobooks	Books focused on a particular topic or skill (eg, interpersonal skills, leadership, wealth building, and relationship enhancement).
Daily morning routines	The act of waking up earlier than usual and prioritizing a set of activities before starting the regular workday (eg, creating a to-do list, exercising, reading, meditating, listening to motivational videos, audiobooks, visualizing).
Advice from mentors	Seeking mentors who share similar interests and have faced similar challenges, collaborating with them, and nurturing these relationships to benefit both the mentee and mentor.

each of those tools. Demographic factors were obtained from participants based on recommendations from the ASPS Registry and Data Analytics office. One of the demographic factors asked was the participants' type of practice, which included the following 7 options: academic practice, salaried academic practice with private practice, solo practice, solo practice-shared facility, military practice, employed physicians, small plastic surgery group (2-5 surgeons), large plastic surgery group (6 or more surgeons), medium multi-specialty group practice (6-20 physicians), and large multi-specialty group practice (more than 20 physicians). Additional demographic factors assessed by the survey included age, years in practice, gender, training background (traditional versus integrated pathways), whether or not they are or have been residency directors, and their extent of involvement in training residents/ fellows. The final survey developed in collaboration with the ASPS can be seen in Supplemental Digital Content 1. (See appendix, Supplemental Digital Content 1, which displays a 10-question survey approved by the ASPS Member Survey Research Services and sent to the ASPS members through an email invitation. <http://links.lww.com/PRSGO/B653>.)

The survey responses were combined into similar groups to facilitate statistical analysis. The 7 practice types were categorized into the following 5 groups: (1) academic practice (academic practice, salaried academic practice with private practice), (2) solo practice (solo practice, solo practice-shared facility), (3) group practice (small plastic surgery group, large plastic surgery group, medium multi-specialty group practice, and large multi-specialty group practice), (4) employed physicians, and (5) military practice. The ages of survey participants were separated into 4 groups: 35–45, 46–55, 56–65, and 66 and above.

The answer choices were based on a Likert scale, which included the following 5 options: not at all important, slightly important, important, fairly important, and very important were converted to ordinal numbers; “not at all important” to a 1, and “very important” to a 5. The weighted averages for the responses by each demographic group were obtained to facilitate comparison amongst the groups. Two-sample *t*-tests were used to evaluate the statistical significance of the differences between groups.

## RESULTS

### Response Rate

A total of 286/2542 (11.25%) ASPS members who received an email invitation participated in the survey. Despite the relatively low response rate, the proportion of survey participants are representative of the entire cohort closely correlated with the proportion of nonrespondents among the ASPS membership. The demographic comparison between the survey participants and the entire active ASPS membership can be seen in [Table 2](#).

### Survey Participant Demographics

Of the 286 respondents, 209 (73%) were men and 77 (26.6%) were women. The ages of participants ranged from 35 to 80, with an average age of 54 ( $s = 10$ ). The number of years in practice ranged from 1 to 50, with an average of 20 years in practice ( $s = 11$ ). In terms of their training background, 189 (66%) became plastic surgeons through the independent pathway, and 70 (24%) through

the integrated pathway. Regarding their current type of practice, 47 (16%) are in an academic practice, 140 (49%) are in solo practice, 78 (27%) in a group practice, 17 (6%) are employed physicians, and 4 (1%) are in military practice. Of the respondents, 20 (7%) were residency directors either currently or in the past and 266 (93%) were not residency directors. A total of 192 (67%) of participants were involved in training residents/fellows at some point in their careers, and 94 (33%) of the participants have not worked with trainees in any capacity. The full set of demographics for survey respondents can be seen in [Table 3](#).

### Professional Development Responses: All Survey Participants

When asked which resources or practices contributed most favorably to their career development, the most common responses included critically analyzing mistakes and adjusting accordingly (96.3%), goal setting (88.51%), and following advice from mentors (85.2%). The personal development tools that were least utilized included self-development books (28%), podcasts and audiobooks (18.8%), and motivational videos (8.8%). The survey responses for whether or not survey participants used a specific personal development can be seen in [Figure 1](#).

When asked about the level of importance (not important, slightly important, important, fairly important, very important) of the same personal development tools, the respondents answered “very important” for the following: critically analyzing mistakes and adjusting accordingly (75%), goal setting (51.6%), following advice from mentors (51.6%), and positive visualization (33.1%). The respondents were most likely to answer “not at all important” for the following: motivational videos (64.6%), podcasts & audiobooks (59.1%), personal development books (47.49%), and personal development conferences (37.8%). The weighted average responses for all personal development tools can be seen in [Figure 2](#).

### Gender

When separating the respondents based on gender, there were no significant differences between men and

**Table 2. Comparison between ASPS Membership Cohort and Survey Participants**

Demographic Variables	Invited Cohort (n = 2542)	%	Survey Participants (n = 286)	%
Gender				
Men	2095	82%	209	73%
Women	445	18%	77	27%
Age groups				
Under 35	27	1%	0	0%
35–45	631	25%	72	25%
46–55	693	27%	73	26%
56–65	747	30%	97	34%
65 and over	429	17%	44	15%
Practice types				
Academic	331	13%	42	15%
Academic (salaried with private practice)	51	2%	5	1%
Employed physician	127	5%	18	6%
Solo practice	1068	42%	129	46%
Solo practice-shared facility	152	6%	11	3%
Large multi-specialty group practice	178	7%	18	6%
Large plastic surgery group practice	101	4%	9	3%
Small plastic surgery group practice	458	18%	44	15%
Medium multi-specialty group practice	51	2%	8	3%
Military	25	1%	4	1%

**Table 3. ASPS Member Survey: Demographics**

Demographic Variables	Number (n = 286)	%
Gender		
Men	209	73%
Women	77	27%
Age groups		
35–45	72	25%
46–55	73	26%
56–65	97	34%
66+	44	15%
Years in practice		
1–10	73	26%
11–20	75	26%
21–30	93	32%
31+	45	16%
Training background		
Traditional pathway	189	66%
Integrated pathway	97	24%
Practice types		
Academic practice	47	16%
Solo practice	140	49%
Group practice	78	27%
Employed physician	17	6%
Military	4	1%
Past or present residency director		
Yes	20	7%
No	266	93%
Involved in training resident, fellows		
Yes	192	67%
No	94	33%

women regarding their responses in the following personal development tools: goal setting, positive visualization, scheduled practice, critically analyzing mistakes, sports, motivational videos, audiobooks, morning routines, and personal development books. Women (2.43) selected personal development conferences at a higher rate than men (2.07,  $P = 0.015$ ). Men (4.20) had a statistically significantly higher rate of attribution of their personal development to mentors when compared with women (3.92,  $P = 0.038$ ). The survey responses based on gender can be seen in Figure 3.

**Age Groups**

The 66 and above age group selected positive visualization (3.65) at a higher rating of importance than the 35–45 age group (3.09,  $P = 0.027$ ). The 66 and up group

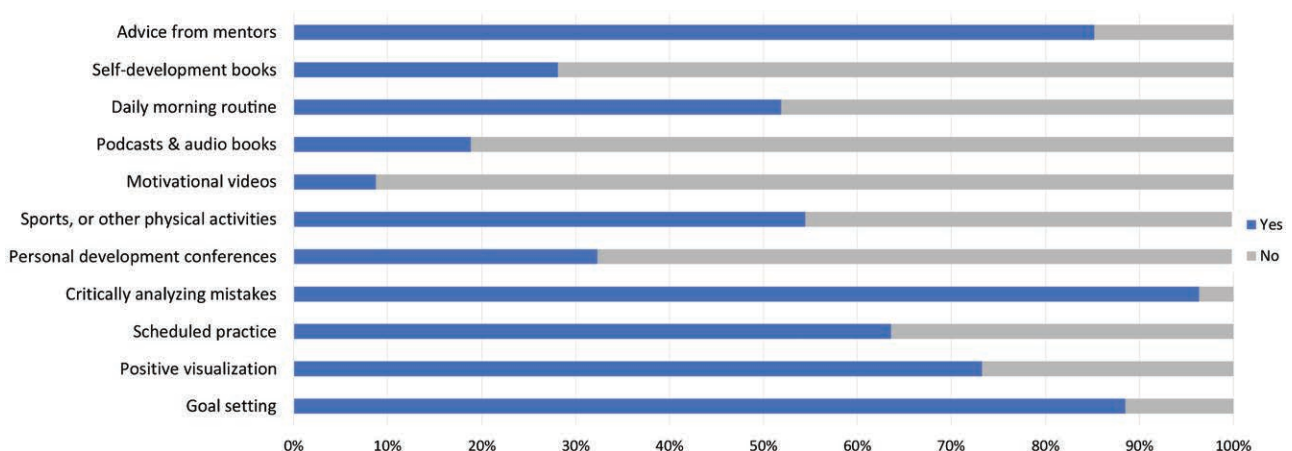
selected motivational videos (1.77) at a higher rating of importance than the 35–45 age group (1.46,  $P = 0.026$ ) and the 56–65 age group (1.34,  $P = 0.002$ ). The 66 and up group also selected podcasts and audiobooks (1.97) as attributable to their personal development more than the 56–65 age group (1.57,  $P = 0.019$ ). The 46–55 age group selected personal development books (2.19) at a higher degree of importance than did the 35–45 age group (1.81,  $P = 0.03$ ). The survey responses based on age groups can be seen in Figure 4.

**Types of Practice**

There were no statistically significant differences between the practice types in the weighted average ratings of importance for the following self-development tools: goal setting, positive visualization, scheduled practice, sports, podcasts, and audiobooks. Survey participants in an academic practice indicated that personal development conferences (2.56) played a more important role in their personal development when compared with participants in a solo practice (2.15,  $P = 0.04$ ) and those in a group practice (1.93,  $P = 0.005$ ). Respondents in a solo practice attributed their personal development to morning routines (2.99) at a higher rate than employed physicians (2.27,  $P = 0.026$ ). Survey respondents in an academic practice attributed advice from mentors to their personal development at a higher rate of importance (4.51) when compared with participants in a solo practice (4.02,  $P = 0.015$ ). Survey participants in a solo practice had a higher average rating of importance for personal development books (2.11) than participants in group practices (1.81,  $P = 0.043$ ). The survey responses based on practice type can be seen in Figure 5.

**Residency Program Directors versus Non-residency Program Directors**

When separating the respondents based on a current-past residency director position from those who have not been residency directors, there were no statistically significant differences between respondents except for a single personal development tool. Past or present residency



**Fig. 1.** The survey responses for whether or not survey participants used specific self-development tools. Answer choices are portrayed in the figure as either yes or no.



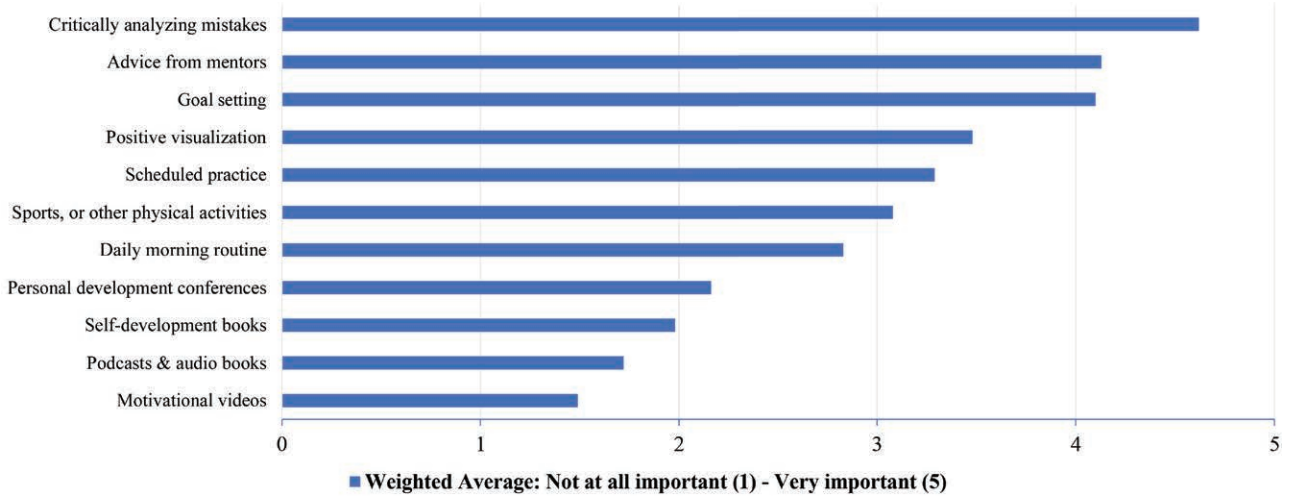


Fig. 2. Weighted average responses for all survey participants.

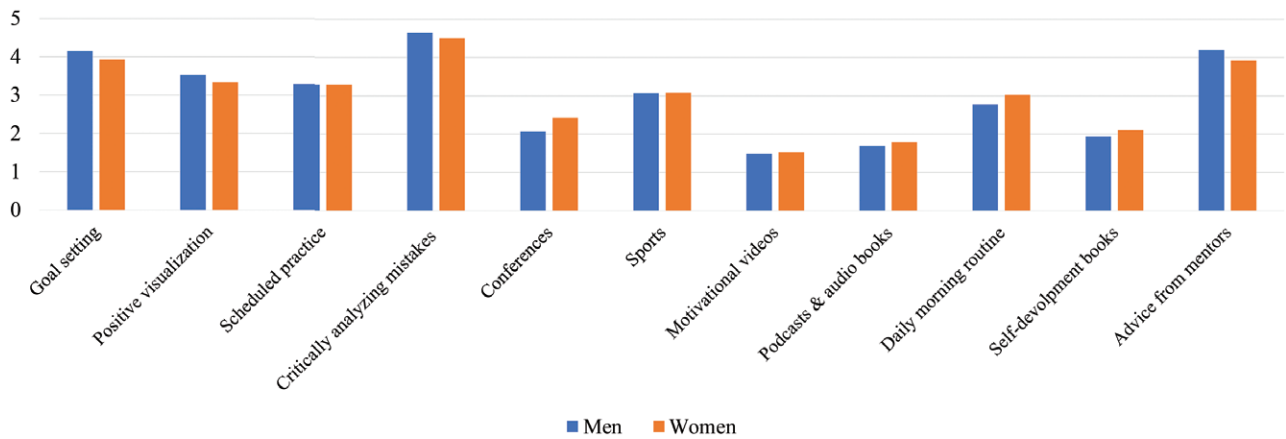


Fig. 3. Weighted average comparisons based on gender.

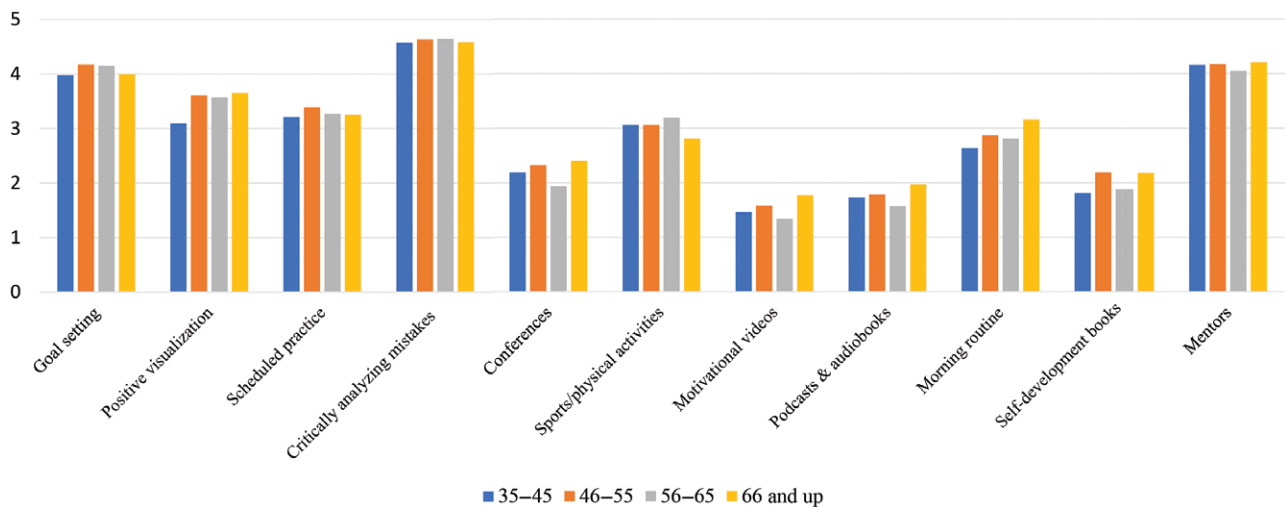
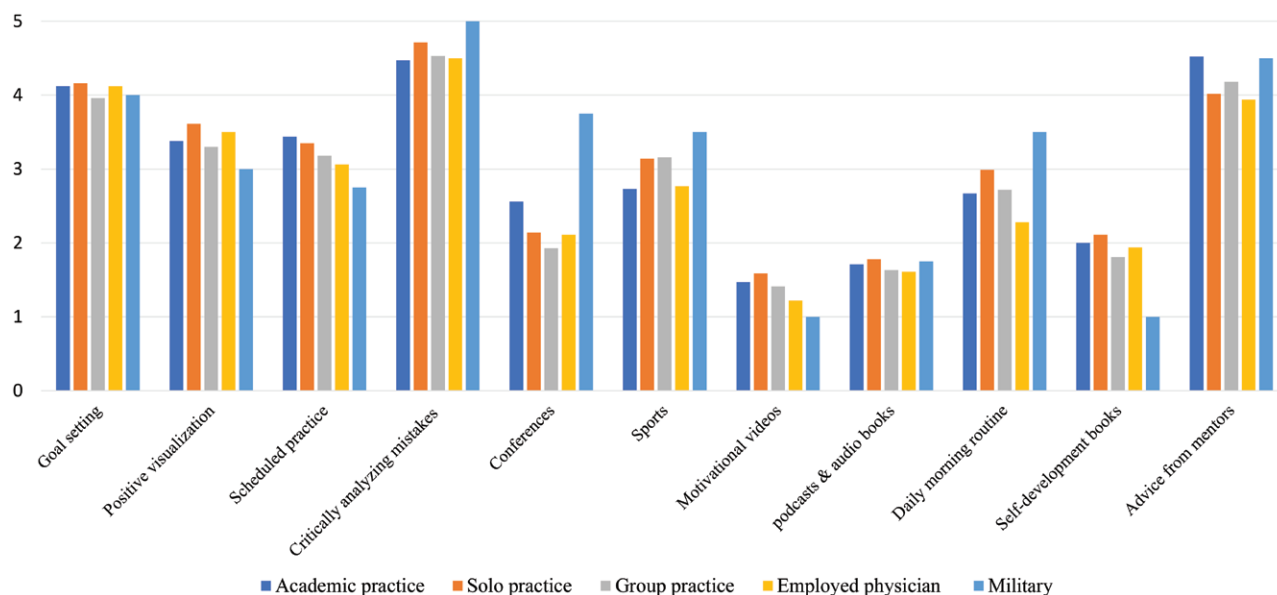


Fig. 4. Weighted average comparisons based on age groups.



**Fig. 5.** Weighted average comparisons based on practice types.

program directors attributed advice from mentors to their personal development at a higher rate (4.61) when compared with those who were not program directors (4.09,  $P = 0.027$ ).

## DISCUSSION

This study is the first of its kind to highlight the types of self-development tools used by plastic surgeons to facilitate career growth and satisfaction. Personal development tools have not been thoroughly analyzed with high levels of evidence in the present literature. Due to the multitude of developmental practices and nuances within each of the tools chosen for this study, this survey study is not meant to provide a practical guide for enhancing personal traits for success. Instead, this article describes commonly referenced career-development tools and analyzes how a representative sample of ASPS members values these tools. Additionally, we recognize that the concept of success is subjective. Attempts to define success and link them to specific practice methods would be subject to various biases and discredit the purpose of this article. We hope the findings outlined in this article bring to light concepts that can be explored by the readers and facilitate their own professional development. Furthermore, we look to increase awareness in the topic of professional development within the realm of plastic surgery. Of note, this survey was taken before the COVID-19 pandemic. Now that the conferences for the foreseeable future have changed format (ie, virtual), it will be interesting to see how these patterns change.

The most common personal development tools used across all respondent types were critically analyzing mistakes and adjusting accordingly, setting goals, following advice from mentors, and practicing positive visualization. We hypothesize that these tools and practices were favored, as they tend to relate to practice-based experiences. The personal development tools least utilized

were self-development books, podcasts, audiobooks, and motivational videos. Although certain development tools such as participating in sports and daily morning routines were not as commonly used by the cohort of survey participants, their rating of importance was within the top half of all self-development tools with weighted averages of 3.1 and 2.8, respectively.

On review of the data, we believe the significant differences among respondents observed in our survey may be influenced by practice type. For example, academic surgeons have a higher rating of importance for the utilization of conferences as a method of self-development. This finding may be attributed to their increased attendance rates due to academic obligations. In the solo practice group, the favoritism toward consistency of morning routines may reflect the need to optimize time/cost efficiency. However, we are unable to definitively prove these claims from the acquired data.

The differences in response rates observed among the subgroups support our view that there are no finite amount or type of standardized developmental tools that will further career development. Instead, the personal developmental tools surveyed in this study provide a framework that can be individualized to achieve personal goals. We acknowledge that in several subgroups, there were a limited number of responses that may be deemed inadequate. For example, respondents in an academic practice who are salaried with a private practice and those in a military practice had an average of 2 and 4 respondents, respectively. Due to the large differences in the number of respondents in the varying subgroups, identifying strong correlations from the data is challenging. For example, there were 131 respondents in solo practice, 18 employed physicians, and 42 in academic practice. It may be the case that confounding variables are not well controlled for in the subgroups with a fewer number of respondents. Additional studies are needed to increase the number of

participants and minimize the possibility of nonresponse bias for certain demographic groups in this survey.

There are several limitations to this study that may influence the potential applicability of this study. The study design inherently introduces a selection bias as those who chose to participate in the survey may have certain personal characteristics that differ from those ASPS members who did not open their emails or chose to not participate. For example, those who did respond may be more active members of the ASPS who are more likely to pursue personal development experiences outside of their routine clinical activities. The subset of survey respondents may prove more likely at baseline to implement the aforementioned developmental practices. A potential improvement to this study would involve the inclusion of examples of each developmental tool that was referenced within the survey. This would better reflect how these methods are used by plastic surgeons. There are multiple avenues that can be pursued to further research into this topic. An example would be conducting a similar study that would include plastic surgery trainees to help modify the residency education curriculum.

## CONCLUSIONS

Our study highlights a topic not directly discussed in the plastic surgery literature. The results of this survey provide a snapshot of ASPS membership across a broad spectrum of providers and practice types and allow the reader to identify with respondents that most closely matched their description. This study helps identify developmental tools and resources that have been utilized by our colleagues to promote professional growth and career satisfaction. Based on the survey responses, ASPS members attribute their personal and professional development to setting measurable goals, carefully analyzing surgical mistakes, and seeking out guidance from mentors.

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