

Original Research

Factors Considered in Ranking Pediatric Orthopaedic Surgery Fellowship Applicants

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Abstract:

Background: Pediatric orthopaedic surgery is a competitive orthopaedic subspecialty that has seen a rise in the number of applications submitted per applicant over the past decade. Surveys of fellowship program directors in other orthopaedic subspecialties including orthopaedic trauma, spine, sports medicine, and hip and knee arthroplasty have demonstrated differing opinions regarding the factors considered most important when ranking applicants. The selection criteria considered most important by pediatric orthopaedic surgery fellowship program directors have not yet been evaluated.

Methods: A web-based questionnaire was sent to the program directors of all pediatric orthopaedic surgery fellowship programs that participate in the San Francisco (SF) Match program. In addition to providing information about program size, number of applicants interviewed, and number of applicants ranked, program directors were presented with 12 selection criteria based on previous surveys of orthopaedic fellowship directors and were asked to rank them in order of importance. A weighted score for each selection criteria was calculated using the following scale: 5 points for each criterion ranked 1st, 4 points for 2nd, 3 points for 3rd, 2 points for 4th, and 1 point for 5th. The total weighted score of each criterion was calculated.

Results: Of the 45 program directors contacted, 36 responded (80% response rate). A plurality of programs both interviewed and ranked between 16 and 20 applicants. The interview and letters of recommendation were the most important selection criteria according to program directors. Other selection criteria deemed important included the applicant's residency program, personal connections, and life experience.

Conclusions: Pediatric orthopaedic surgery fellowship program directors consider the interview, letters of recommendation, and the applicant's residency program to be the most important factors when ranking fellowship candidates. These findings may be useful to orthopaedic residents interested in pursuing fellowship training in pediatric orthopaedic surgery by providing applicants with a better understanding of which areas to focus on when preparing for the fellowship interview and subsequent match process.

Key Concepts:

- The pediatric orthopaedic fellowship match remains competitive, and knowledge of which factors are considered most important by pediatric orthopaedic surgery fellowship program directors during the application process may help applicants improve their application.
- Pediatric orthopaedic fellowship program directors consider the interview, letters of recommendation, and the applicant’s residency program to be the most important factors when ranking fellowship candidates.
- The applicant’s medical school, extracurricular activities, and geographic ties to the fellowship program were less important to program directors when ranking applicants.
- These findings may be useful to residents preparing to navigate the pediatric orthopaedic fellowship application process and provide insight on the criteria being used to evaluate the next generation of pediatric orthopaedic surgeons.

Level of Evidence: Level V

Introduction

Orthopaedic surgeons have become increasingly specialized in recent years, with more than 90% of current orthopaedic surgery residents indicating that they plan to pursue fellowship training after the completion of their residency program.¹ Each year, approximately 10% of all orthopaedic surgery residents choose to pursue a pediatric orthopaedic surgery fellowship.² Although match rates in pediatric orthopaedic surgery are typically near 90%, The Match remains competitive, with only 30% to 40% of applicants matching into their top choice annually.² As such, knowledge of which factors are considered most important by pediatric orthopaedic surgery fellowship program directors during the application process may help applicants to improve their application and their odds of ultimately matching into their desired program.

Many previous studies have evaluated factors considered important by fellowship program directors during the application and interview process, including studies evaluating the importance of various selection criteria in other orthopaedic fellowships including trauma, spine, sports medicine, and hip and knee arthroplasty.³⁻⁶ While these studies identified several similar criteria, such as the interview and letters of recommendation,

as important factors used by program directors to rank applicants, the emphasis placed on some factors such as research experience, personal connections, and the applicant’s residency program varied between orthopaedic subspecialties.³⁻⁶ Furthermore, these studies were conducted prior to the beginning of the COVID-19 pandemic, which has fundamentally altered the recruitment process and may therefore influence which factors are considered most important when ranking fellowship applicants.

While the most important criteria used by program directors from various orthopaedic subspecialties to evaluate applicants have been identified for orthopaedic trauma, spine, sports medicine, and hip and knee arthroplasty fellowships, to the best of our knowledge, there have not been any studies examining the selection criteria considered most important by pediatric orthopaedic surgery fellowship program directors. As such, the purpose of our study was to identify the factors that pediatric orthopaedic fellowship program directors deem most important when ranking applicants for fellowship training. The results of our study may be useful to both fellowship programs and fellowship applicants interested in pursuing a career in pediatric orthopaedic surgery.

Materials and Methods

A web-based questionnaire was created and a link to this questionnaire was sent by email to all program directors of pediatric orthopaedic fellowships participating in the San Francisco Matching Program (SF Match). The study was approved by the Stanford University School of Medicine Institutional Review Board (IRB). The names of program directors were obtained from the Pediatric Orthopaedic Society of North America (POSNA) fellowship directory. Email addresses of program directors were identified from this directory when available. If emails were not listed, contact information was obtained using other directories (e.g., AAOS member directory) or by searching for previous publications by the individual. If multiple co-program directors were listed, the first individual listed was selected to avoid receiving multiple responses from one program.

Initial emails to all program directors were sent on October 25, 2021. A reminder email was sent to all program directors who had not yet completed the survey 4 weeks after the initial email was sent. Response times were recorded, but individual responses were anonymous. The questionnaire consisted of three multiple choice questions in which respondents indicated their program size and how many applicants they interviewed and

ranked each year. Program directors were then asked to evaluate 12 specific factors that might be considered in ranking fellowship applicants based on prior surveys of orthopaedic fellowship program directors.³⁻⁶ These 12 criteria were displayed in a random order for each survey recipient. Randomization was automated by the online survey tool used to distribute the survey (Qualtrics, Provo, UT). Program directors were asked to rank all 12 factors in order of importance. A free-text field was provided in which program directors could write in any other factor(s) they considered important when ranking fellowship applicants. A weighted score for each criterion was calculated using the following scale: 5 points for each time a factor was ranked 1st, 4 points for 2nd, 3 points for 3rd, 2 points for 4th, and 1 point for 5th. The total score was summed for each criterion. This scoring system is consistent with surveys of program directors from orthopaedic trauma, spine, sports medicine, and hip and knee arthroplasty subspecialties.³⁻⁶

Results

Of the 45 program directors contacted, 36 responded for an 80% overall response rate. Fellowship programs averaged slightly more than 2 positions available per program, with a range of 1-6 fellowship slots available annually (Figure 1). A plurality of programs both

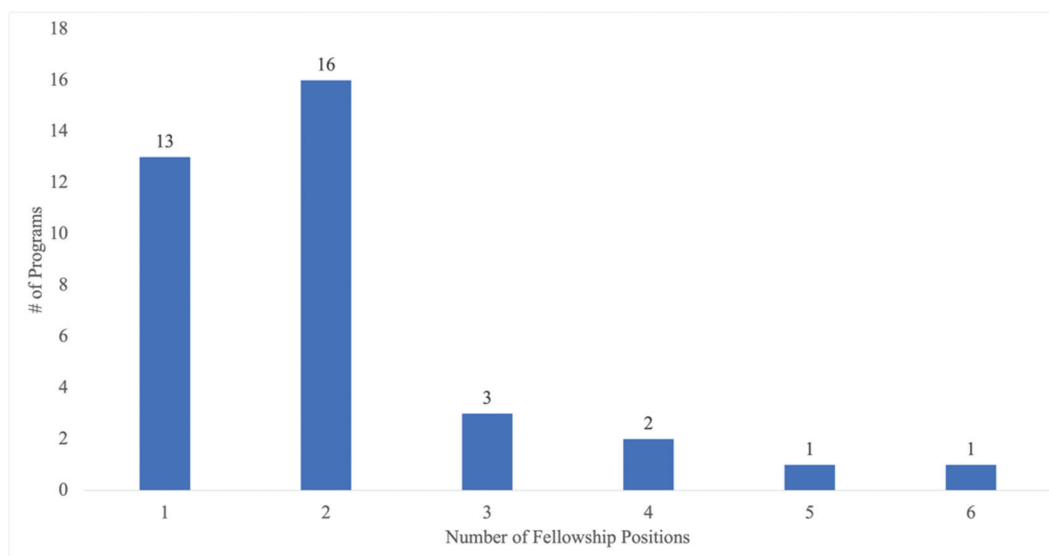


Figure 1. Number of fellowship positions available.

interviewed and ranked between 16 and 20 applicants (Figures 2 and 3).

According to the program directors surveyed, the most important criteria when ranking fellowship applicants were the interview (weighted score 150 points), letters of recommendation (148 points), residency program (51 points), personal connections (48 points), and life experience (40 points). No other criteria evaluated

earned more than 25 total points according to our scoring criteria. The three least important criteria according to program directors were the applicant’s medical school (10 points), geographic ties to the fellowship program (6 points), and extracurricular activities (5 points). Weighted scores of all fellowship criteria are included in Figure 4. Table 1 shows the average rank (1-12, with 1 being most important and 12 being least important) of each of the 12 criteria included in our study. Of the 36 program

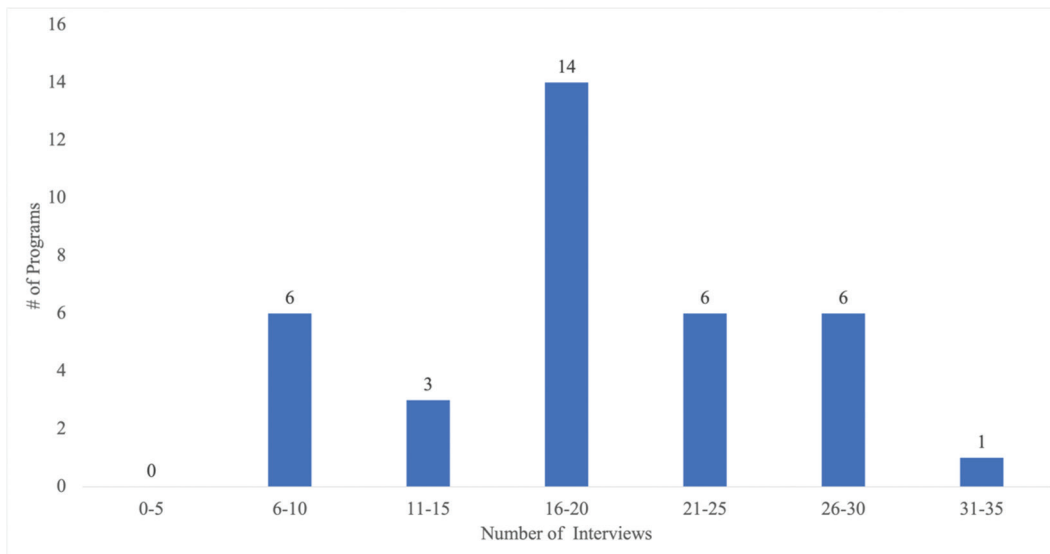


Figure 2. Number of applicants interviewed per year.

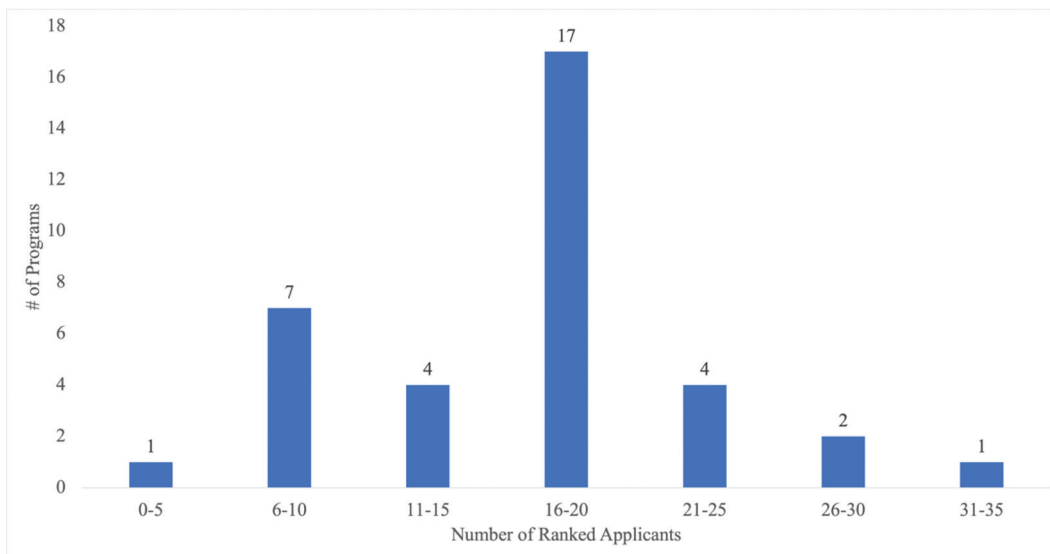


Figure 3. Number of applicants ranked per year.

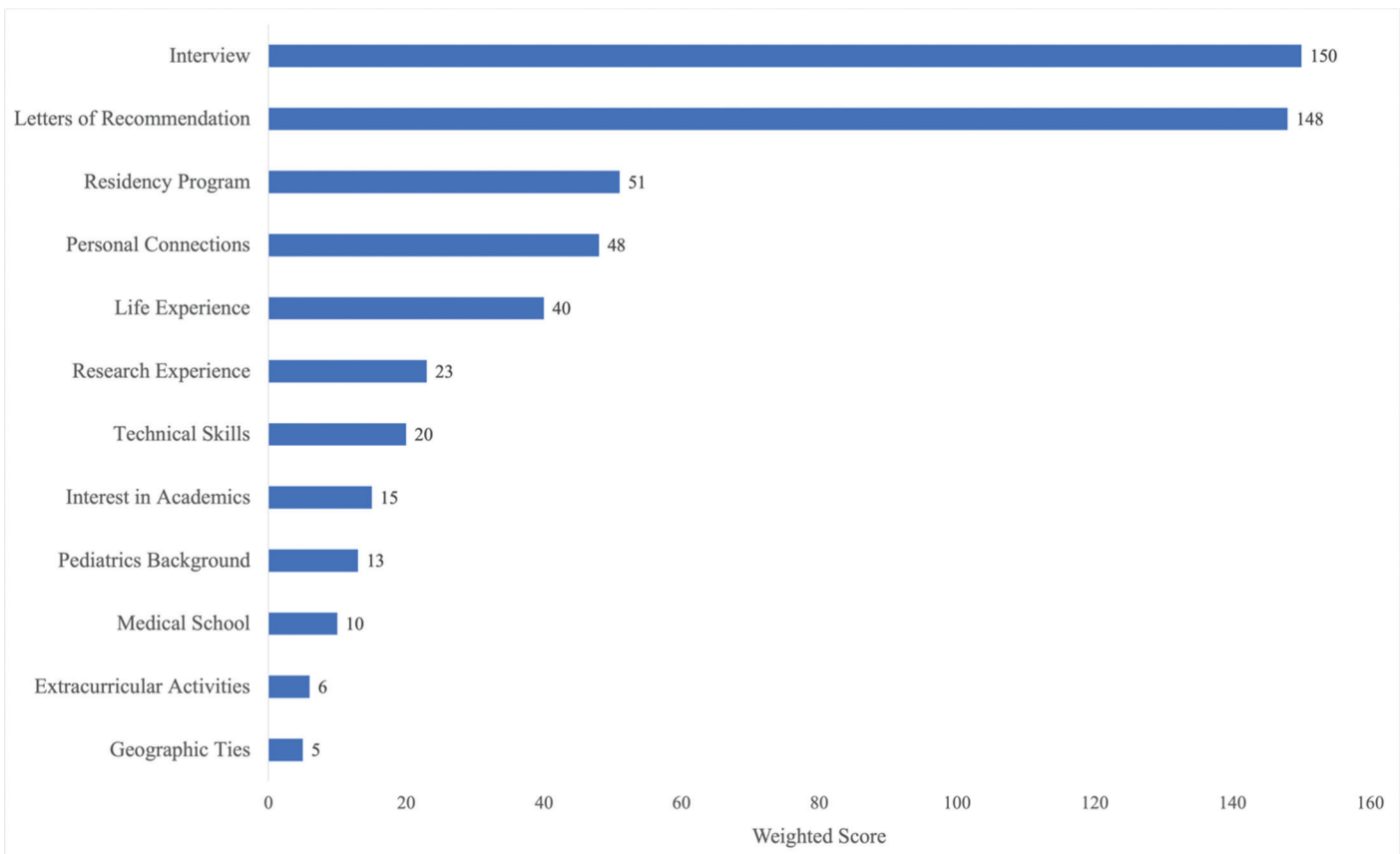


Figure 4. Weighted score of 12 criteria considered by pediatric orthopaedic surgery fellowship program directors when ranking fellowship applicants.

Table 1. Average Rank (scale 1-12, with 1 being most important) of 12 Fellowship Selection Criteria

Selection Criteria	Rank
Interview	2.0
Letters of Recommendation	2.1
Residency Program	4.9
Life Experience	5.6
Research Experience	5.7
Personal Connections	6.0
Interest in Academics	7.0
Technical Skills	7.2
Pediatrics Background	7.5
Medical School	8.6
Extracurricular Activities	9.1
Geographic Ties	10.2

directors who responded to the survey, 18 (50.0%) identified the interview as the most important factor, and 15 (41.7%) identified letters of recommendation as the most important criteria. The only other criteria ranked first by program directors included personal connections (2 program directors) and research experience (1 program director) (Table 2). Seven program directors wrote in other criteria they considered important when ranking fellowship applicants. Common responses included interpersonal skills/emotional intelligence (3 program directors), board scores (2 program directors), and prior fellowships (1 program director).

Discussion

It has become more common for orthopaedic surgery residents to complete fellowship training following the conclusion of their residency program.⁷ Surveys

Table 2. Selection Criteria Ranked as the Most Important Factor Considered by Pediatric Orthopaedic Fellowship Program Directors When Ranking Applicants

Selection Criteria	# Programs	Percent programs (n = 36)
Interview	18	50.0%
Letters of Recommendation	15	41.7%
Personal Connections	2	5.6%
Research Experience	1	2.8%

administered to pediatric orthopaedic fellowship applicants from 2010 to 2018 revealed that the number of applications submitted per pediatric orthopaedic fellowship applicant increased from 10.7 in 2010 to 17.8 in 2018.¹ As such, it would be helpful for applicants to know which criteria are weighed most heavily by program directors when generating a rank list. The results of our study demonstrate that when applying to pediatric orthopaedic fellowship programs, the most important factors that applicants should consider during the application process are the interview, letters of recommendation, his or her residency program, and personal connections made with the program of interest. These findings may be useful to residents as well as medical students preparing to navigate the pediatric orthopaedic fellowship application process and provide insight on the criteria being used to evaluate the next generation of pediatric orthopaedic surgeons.

When comparing our findings to other studies evaluating fellowship selection criteria for orthopaedic subspecialties including orthopaedic trauma, spine, sports, and hip and knee arthroplasty, program directors from all five subspecialties identified the interview as the most important factor considered when ranking applicants and letters of recommendation as the second most important factor.³⁻⁶ Our results also align with a survey of all orthopaedic subspecialty program directors administered in 2013 which identified the interview as the most important criteria used when ranking applicants and letters of recommendation as the most important criteria used when deciding to offer an applicant an

interview invitation.⁸ Interestingly, research experience was not very highly valued by pediatric orthopaedic surgery fellowship program directors, ranking as the 6th most important criteria of the 12 included in our study. This contrasts with sports medicine and spine fellowship programs, where research was ranked as the 4th most important criteria and averaged a better weighted score using the same scoring system implemented in our study.^{3,5} The applicant's residency program was the third most important selection criteria used by pediatric orthopaedic fellowship program directors. The relative importance of the residency program is similar to that indicated by sports medicine program directors but greater than that indicated by orthopaedic trauma, spine, and hip and knee arthroplasty program directors.³⁻⁶ This finding may be important to medical students interested in applying to orthopaedic surgery residency programs, as medical students interested in becoming pediatric orthopaedic surgeons must consider which residency programs provide them with the best opportunity to achieve their career goals.

Personal connections were deemed important by pediatric orthopaedic fellowship program directors, ranking as the 4th most important criteria of the 12 studied. Personal connections appear to be important in all orthopaedic subspecialties, ranking 3rd, 3rd, 5th, and 3rd out of 12 criteria according to orthopaedic trauma, spine, sports medicine, and hip and knee arthroplasty fellowship program directors, respectively.³⁻⁶ These findings emphasize to applicants that forming positive personal connections with faculty from a program that they are interested in (via research experiences, orthopaedic conferences, and/or mentor connections) may be beneficial during The Match process. Admittedly, it requires tremendous foresight for residents to identify their subspecialty of interest as well as potential fellowship programs of interest far enough in advance to make a meaningful connection with a program director prior to the application cycle; however, if these connections are made, they appear to be important to program directors during the applicant review process.

Our study results indicate that an applicant's geographic ties to the fellowship program are not considered very important by program directors when ranking applicants, with pediatric orthopaedic fellowship program directors ranking geographic ties as the least important criteria of the 12 included in our study. These findings align with other orthopaedic subspecialties, where geographical ties ranked as the 9th, 11th, 12th, and 10th most important criteria according to orthopaedic trauma, spine, sports medicine, and hip and knee arthroplasty fellowship program directors, respectively.³⁻⁶ As such, applicants should not feel geographically constrained when deciding where to apply and should apply to programs that fit their specific needs, regardless of location.

A 2015 survey of orthopaedic fellowship program directors and applicants revealed that approximately 70% of program directors and applicants wanted changes made to the orthopaedic fellowship interview process, with interviews in a centralized location and/or videoconferencing interviews as common recommendations to make the interview process more affordable and convenient for both applicants and programs.⁹ The application process is quite expensive, with applicants often spending more than \$6000 to apply and interview.⁹ The COVID-19 pandemic forced many fellowship programs to conduct virtual fellowship interviews, which likely reduced application associated costs for many candidates. The results of our study are notable given that the program directors who responded to our survey have all experienced one year of virtual interviews, whereas the program directors who responded to the surveys in other orthopaedic subspecialties had not yet administered primarily virtual interviews. The virtual format of pediatric orthopaedic fellowship interviews has not appeared to diminish their significance according to the program directors who responded to survey, with the interview cited as the most important factor considered when ranking applicants. If the quality of the videoconference interview remains at a level where it is still deemed extremely valuable to fellowship program directors, it may be a cheaper alternative that would allow for applicants to feel less geographically

constrained while undergoing the application process; however, it is unclear how virtual interviews impacted Match outcomes and whether virtual interviews will continue for future application cycles.

There are limitations to this study. First, program directors were asked to rank the relative importance of 12 criteria used when ranking applicants. There may be other criteria important to program directors not evaluated in our study; however, the 12 criteria we used replicated the criteria asked of orthopaedic trauma, spine, sports medicine, and hip and knee arthroplasty program directors in order to allow for direct comparison between various subspecialties.³⁻⁶ Additionally, program directors were able to write in criteria that may have been important to them that were not on the list of 12 criteria provided to them. Another limitation of our study was that not all program directors responded to the survey; therefore, our findings may not be generalizable to all pediatric orthopaedic fellowship programs. However, our response rate of 80% was comparable to the response rates of orthopaedic trauma (83%), spine (71%), and sports medicine (62%) program directors and much greater than that of hip and knee arthroplasty program directors (35%).³⁻⁶ As such, we feel this study sheds light on the selection criteria important to the large majority of pediatric orthopaedic fellowship program directors.

In summary, this survey study identified the interview, letters of recommendation, and the applicant's residency program as the three most important selection criteria used by pediatric orthopaedic fellowship program directors when ranking applicants. Our findings may be useful to orthopaedic surgery residents and medical students interested in pursuing a career in pediatric orthopaedic surgery, as several of the criteria important to program directors (such as an applicant's residency program and personal contacts) require applicant foresight and preparation. A better understanding of the factors considered important to pediatric orthopaedic surgery fellowship program directors will enable applicants to better prepare for the competitive match process as they launch their careers in pediatric orthopaedic surgery.

Additional Links

- POSNA Directory of Pediatric Fellowships: <https://posna.org/Physician-Education/Fellowships/Peds-Ortho-Fellowships>
- POSNA Pediatric Orthopaedic Fellowship Accreditation: <https://posna.org/Resources/Fellowship-Accreditation>

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