Musculoskeletal Medicine and Pain

Review Article

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Foot and ankle fellowship-trained osteopathic orthopaedic surgeons: a review, analysis, and understanding of current trends

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Abstract

Context: Over the past several decades, orthopedic surgery has seen a substantial increase in the number of surgeons completing fellowship training. Doctors of Osteopathic Medicine (DOs) continue to advance their orthopedic education through subspecialty fellowship training. DOs have represented between approximately 6 % and 15 % of American Orthopaedic Foot and Ankle Society (AOFAS) fellows. Although historical representation has been considered strong, the fellowship match years 2020 and 2021 have seen a decline in osteopathic orthopedic surgeons participating in foot and ankle fellowships. This deviates from the recent trends of increasing participation across orthopedic subspecialities.
Objectives: To investigate and review the trends of orthopedic foot and ankle fellowship training.
Methods: Data was reviewed from the AOFAS regarding number of fellows matched and degree obtained. Data from the Federation of State Medical Boards (FSMB), American Orthopaedic Foot and Ankle Society (AOFAS) and Association of American Medical Colleges (AAMC) were reviewed for physician trends and match statistics.
Results: Fellowship match years 2020 and 2021 have seen a decline in osteopathic orthopedic surgeons participating in foot and ankle fellowships, with only roughly 3% of AOFAS fellows being osteopathic trained.
Conclusions: Orthopedic surgery has the highest rate of subspecialty training of all surgical specialties. Although there is hope for an increasing osteopathic presence in orthopedic surgery, recent literature has pointed to potential for continued bias in opportunities for osteopathic students. We hope that increased participation of osteopathic graduates in orthopedic surgery training programs will result in the continued expansion of osteopathic orthopedic surgeons completing fellowship training, including in foot and ankle surgery.

Keywords: fellowship; foot and ankle; osteopathic physician; training

Over the past several decades, orthopedic surgery has seen a substantial increase in the number of surgeons completing fellowship training after residency [1–3]. In 2013, nearly 90 % of orthopedic surgeons now applying for board certification had completed a fellowship. This number has increased from approximately 76 % reported a decade prior [4, 5]. Reasons for this dramatic surge in subspecialty training have been well documented in the orthopedic literature [6–9]. Subspecialty positions dominate the job market, reinforcing incentives for residents to pursue additional training and tutelage through fellowship programs [10].

Doctors of Osteopathic Medicine (DOs) continue to advance their orthopedic education through subspecialty fellowship training. With specific attention to foot and ankle fellowship training, DOs have represented between approximately 6 % and 15 % of American Orthopaedic Foot and Ankle Society (AOFAS) fellows [11]. Although historical representation has been considered strong, the fellowship match years 2020 and 2021 have seen a precipitous decline in osteopathic orthopedic surgeons participating in foot and

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ankle fellowships, with only roughly 3 % of AOFAS fellows being osteopathic trained [11]. This deviates from the recent trends of increasing participation across orthopedic subspecialities [2].

The goal of this publication is to investigate and review the trends of foot and ankle fellowship training orthopedic surgeons, particularly among osteopathic graduates. To our knowledge, there has been no previous or recent literature presenting and discussing such trends. Additionally, we will provide commentary on the historical and modern perspective on osteopathic training to encourage a better understanding of the DO background.

Methods

This study analyzed data from email correspondence in 2022 with the American Orthopaedic Foot and Ankle Society regarding the number of fellows matched and degree obtained from 2012 to 2021. Publicly available data from the Federation of State Medical Boards, the American Orthopaedic Foot and Ankle Society, and the Association of American Medical Colleges (AAMC) were reviewed retrospectively for physician trends and match statistics. A literature review was conducted on PubMed and Google Scholar for trends in orthopedic fellowship participation, osteopathic medical education, and the single accreditation system (SAS). This study was completed in 2022.

Results

DOs currently represent 10 % of the AOFAS's membership and 0.51 % of all practicing orthopedic surgeons across all specialties. Fellowship match years 2020 and 2021 saw a precipitous decline in osteopathic orthopedic surgeons participating in foot and ankle fellowships, with only roughly 3 % of AOFAS fellows being osteopathic trained.

Discussion

Osteopathic physician perspective on training

Osteopathic and allopathic degrees are recognized as equivalent by state licensing agencies and many healthcare institutions [12]. Few differences are encountered in osteopathic and allopathic curricula from a medical education perspective. Osteopathic and allopathic medical students are both exposed to the classic structure of two preclinical didactic years, followed by two clinical clerkship years. The basic science courses encountered in the preclinical years are consistent [12, 13]. State licensing examinations, the National Board of Osteopathic Medical Examiners (NBOME) Comprehensive Osteopathic Medical Licensing Examination (COMLEX) "level," and National Board of Medical Examiners (NBME) "step" examinations, test similar content [14].

Osteopathic medical students engage in supplemental coursework that explores the philosophy behind the practice of osteopathic medicine. Osteopathic Principles and Practice (OPP) incorporates the Principles of Osteopathy into traditional medical coursework. These principles are rooted in the notion that the primary role of the osteopathic physician is to facilitate the inherent ability of the patient's body to heal itself [15]. Students are also required to participate in "lab"-based instruction in osteopathic manipulative therapy, requiring knowledge of anatomic structure and their functional interrelations [16]. This "hands-on" course requires students to have advanced knowledge of these anatomical relationships and the manipulation thereof. These additional skills and advanced anatomical knowledge may serve DOs well in subspecialty residencies and fellowships, especially orthopedic surgery.

The AOA and ACGME single accreditation change: impact on DO orthopedic surgery residents

On July 1, 2015, the Accreditation Council for Graduate Medical Education (ACGME) and the American Osteopathic Association (AOA) began a 5-year process of integrating the "match" process, with AOA programs complying with ACGME accreditation standards [17, 18]. Previously, allopathic and osteopathic medical school graduates had independent programs, with independent accreditation standards. Medical school graduates had to select which "match" process in which to participate. While there was a degree of exclusivity with which program candidates could apply based upon degree, this system afforded osteopathic physician residency "spots" in more competitive subspecialties.

However, the SAS resulted in the dissolution of numerous historically osteopathic subspecialty programs. For example, orthopedic surgery had 44 AOA accredited programs, with 41 applying for accreditation status. Only 36 were accredited by the ACGME after the merger. The number of AOA – approved positions decreased from 700 to 582 positions for the 36 remaining programs that were initially accredited through the ACGME-approved SAS in June 2020 [18]. This loss of eight programs resulted in the loss of 118

residency spots that were traditionally held by osteopathic trainees – a 16.9 % reduction.

In 2011, there were 447 DO orthopedic residents in AOA – accredited programs, comprising 7.6 % of all orthopedic surgery positions, and 38 in ACGME-accredited programs, comprising 0.5 % of osteopathic graduates in ACGME programs [18–21]. In 2019–2020, the year prior to the initiation of the SAS, there were 522 DO orthopedic surgery residents, accounting for 2.37 % of all residents nationally and 12.38 % of orthopedic surgery residents [20]. The following year, after the completion of the SAS, there was a slight increase to 578 DO orthopedic surgery residents, accounting for 2.44 % of all residents and 13.44 % of orthopedic residents [20].

Osteopathic physician and resident trends

Over the past decade, there has been an increasing number of osteopathic medical school graduates, and an increasing percentage have been entering surgical training programs and their subsequent fellowships [13]. According to the Federation of State Medical Boards, there were 58,329 osteopathic physicians licensed to practice medicine in the United States and the District of Columbia in 2010, comprising 6.9 % of all physicians [22]. The number of osteopathic physicians increased to 89,764 in 2018, representing 9.1 % of all practicing physicians [23]. Subsequently, the 2020–2021 Osteopathic Medical Profession Report noted that the number of osteopathic physicians increased to approximately 135,000, currently representing 11 % of all physicians [24].

Trends in foot and ankle fellowship participation

The American Foot and Ankle Society was founded in 1969 by seven colleagues who were concerned about the absence of courses centered around the foot at the American Academy of Orthopaedic Surgeons (AAOS) meetings. Jahss and colleagues [25] noted that foot and ankle pathology composed roughly 20 % of the orthopedic surgeon's practice and the society's goal was to further education, innovation, and research in foot and ankle.

Foot and ankle as a subspecialty within orthopedic surgery that has seen an increasing number of one-year fellowship training positions offered over the past decade. In 2010, 58 positions were offered through 34 participating programs. This number increased to 75 positions through 47 programs just Five years later in 2015 [2]. By 2021, 79 positions were offered through 49 programs (Table 1) [11, 26].

Table 1: Summarizing DO foot and ankle fellowship trends [11].

Year	2016	2017	2018	2019	2020	2021
Fellowship positions available	74	74	74	71	75	79
Number of programs	46	45	45	43	45	49
Completed fellowship applications received	75	90	91	79	84	84
Rank list submitted	62	68	65	65	66	76
Positions filled in match	56	59	58	52	54	53
Post match positions filled	4	3	3	4	4	4
Total number positions filled	60	62	61	56	58	57
Number of DO fellows, starting	4	7	9	7	2	2
AOFAS osteopathic trained orthopedic members	84	86	91	97	106	104
Osteopathic physicians starting fellowship, %	6.7	11.3	14.8	12.5	3.4	3.5

AOFAS, American Orthopaedic Foot and Ankle Society; DO, Doctor of Osteopathic Medicine.

Currently, there are 1,103 active AOFAS members [27], equating to approximately 5 % of practicing orthopedic surgeons, with 110 of these members being DOs (Jessica Dornfeld, BA, Director of Marketing and Membership, AOFAS; e-mail communication, June 2022). DOs represent only 10 % of the AOFAS's membership and 0.5 % of all practicing orthopedic surgeons [28]. However, osteopathic membership in the society has been steadily increasing in recent years. According to data obtained from correspondence with the AOFAS, the number of DO members has increased from 84 osteopathic-trained orthopedic physicians in 2016 to 110 in 2022 (Figure 1) (Jessica Dornfeld, BA, Director of Marketing and Membership, AOFAS; e-mail communication, June 2022).

Historically, there has been an increasing trend of DOs pursuing foot and ankle fellowships from 2012 to 2018 (Figure 2). DO representation increased from four fellows in 2012 to nine in 2018. The percentage of DO residents representing those who matched into foot and ankle fellowships increased from 6.7 % in 2016 to 14.8 % in 2018. However, despite this hopeful trend in DO participation in foot and ankle fellowships, the 2019 match year saw a drop to 7 DO foot and ankle fellows (12.5 %). Furthermore, there was a significant drop in the 2020 and 2021 match years, with only two osteopathic fellows for both years (or 3.4 % and 3.5 % of all foot and ankle fellowship candidates holding osteopathic degrees, respectively) (Jessica Dornfeld, BA, Director of Marketing and Membership, AOFAS; e-mail communication, June 2022) [11].

Although the 2020 and 2021 match years may have seen a drop in DO interest in foot and ankle fellowship, this was also seen across the US among MD candidates, as well (Figure 3). In 2019, there was a decline to 56 fellows, from 61 fellows the

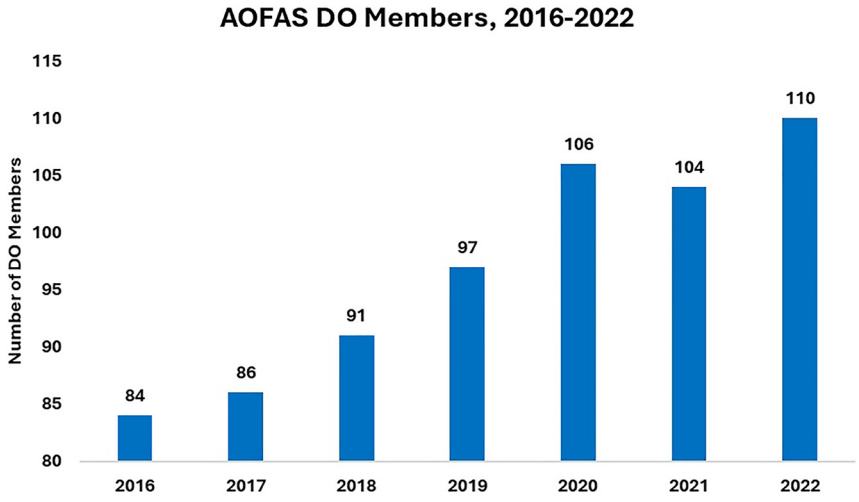

Figure 1: Osteopathic American Orthopaedic Foot and Ankle Society (AOFAS) members, total, 2016–2022.

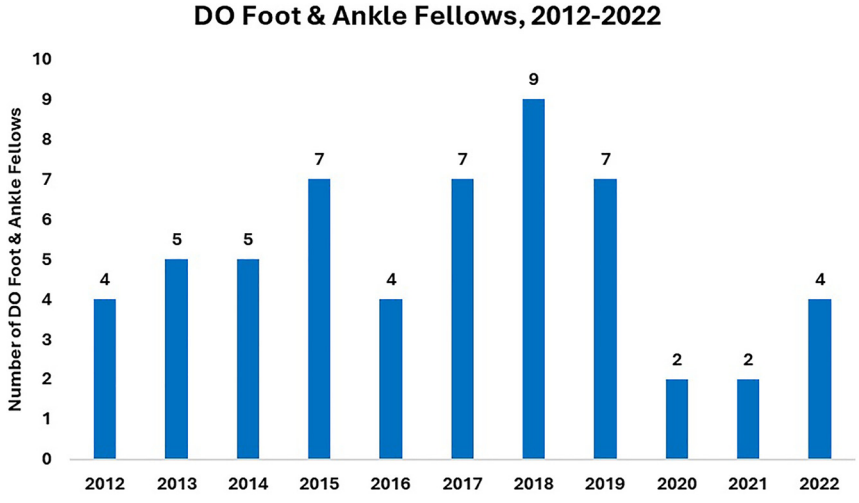

Figure 2: Osteopathic foot and ankle fellows by match year, 2012–2022.

previous year (2018). Year 2020 had an increase in two fellows to 58, while 2021 declined again to 57 fellows across foot and ankle training programs [11]. By 2022, the number of DOs accepted into foot and ankle fellowship doubled to 4, with 54 positions filled in the match (Jessica Dornfeld, BA, Director of Marketing and Membership, AOFAS; e-mail communication, June 2022). Although the number of DOs in foot and ankle fellowship doubled to four from the previous year (2021), a consistent total number of residents matched (Jessica Dornfeld, BA, Director of Marketing and Membership, AOFAS; e-mail communication, June 2022) [11]. This could be related to an increasing number of graduating osteopathic residents matching into orthopedic surgery, an uptick in interest in foot and ankle for the graduating residents, or another factor.

The apparent decline in interest does not appear to follow a particular pattern or be centered around a definable event. One possible explanation for the more recent apparent decline in interest in foot and ankle could be that only seven out of 48 (14.6 %) of foot and ankle fellowship programs were accredited for the 2021 match year [29]. However, interest in subspecialty fellowships has been previously noted to wax and wane. These noted trends could be multifactorial from both realized and unrealized factors, including the perception for specialty saturation in the job market, natural fluctuation of graduating resident interest, degree of exposure to the subspecialty during residency, odds of matching into an applicant's first choice, or the apparent societal need for the subspecialist [30].

The recent decline and stagnation in the number of graduating orthopedic and osteopathic orthopedic residents completing fellowships in foot and ankle surgery must be further investigated and ultimately addressed, as there is a projected national shortage of orthopedic foot and ankle surgeons.

This current study has several limitations. Multiple organizations are involved in the match process for orthopedic fellowships across all subspecialties, that

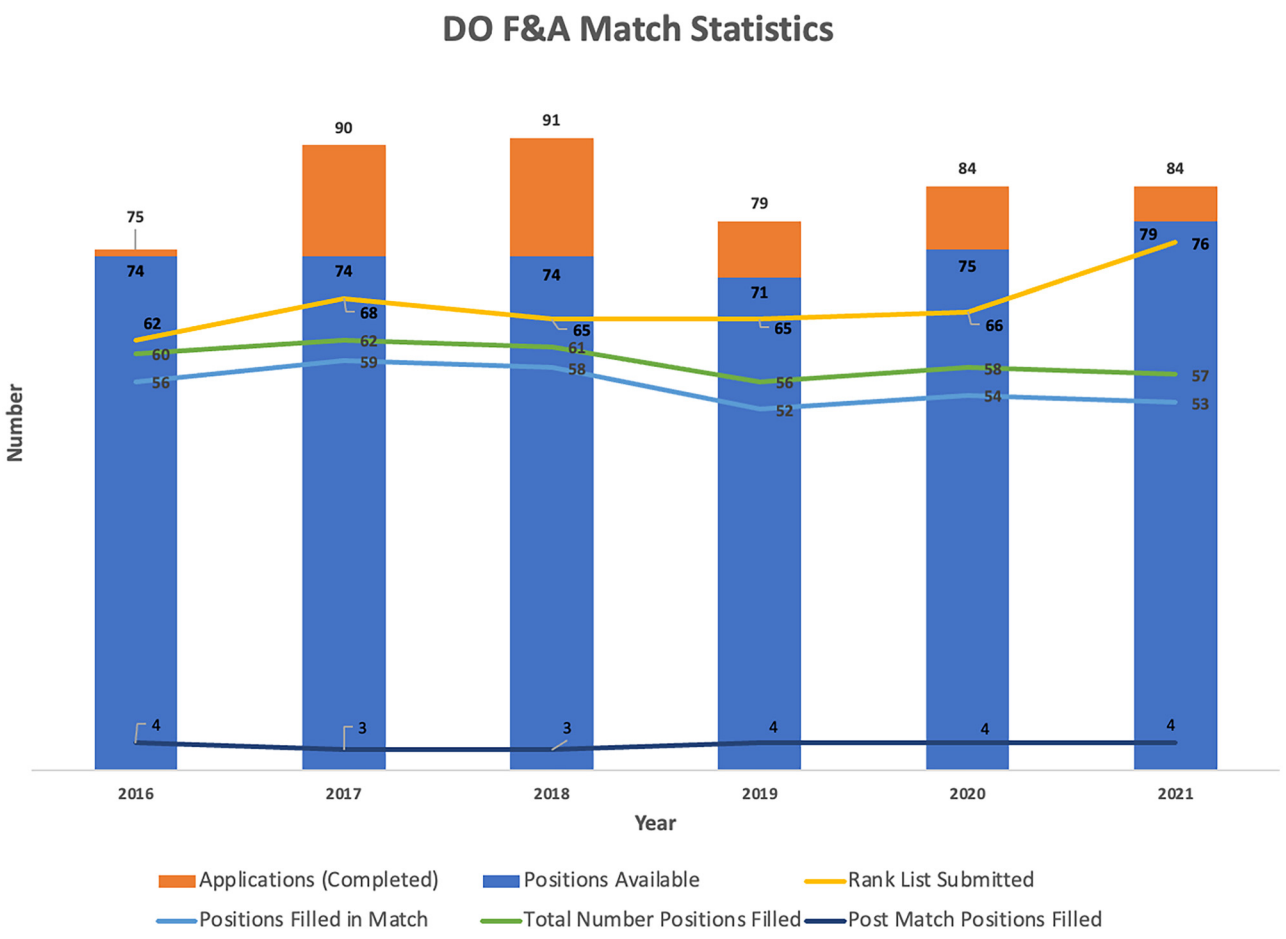

Figure 3: Graph demonstrating trends of total foot and ankle fellowship positions available, completed applications, the number of candidates who submitted rank lists, positions filled in match, post-match positions filled, and total number of positions filled, 2016–2021 [11].

includes both accredited and nonaccredited programs. Reliable and consistent data available for review are lacking, with the data available publicly inconsistently distinguishing between degree (Allopathic vs. Osteopathic) and graduates from the United States and foreign medical graduates. The AOFAS had limited internal data available for review from the years 2012 to 2021. Finally, this study was a retrospective review of the trends of foot and ankle fellows, therefore the motives and personal decision-making of the individual decisions for pursing a particular fellowship was unable to be elucidated.

Conclusions

Orthopedic surgery has the highest rate of subspecialty training out of all surgical specialties, with greater than 90 % of orthopedic residents now completing a fellowship [2, 30]. Specific to foot and ankle fellowship training, DOs currently represent 10 % of the AOFAS's membership and 0.51 % of all practicing orthopedic surgeons across all specialties [28]. The recent SAS has impacted the number of osteopathic orthopedic surgery residents; however, the impact on the number of DOs pursuing a foot and ankle fellowship has been variable. Although there is hope for an increasing osteopathic presence in orthopedic surgery, recent literature has pointed to the potential for continued bias in opportunities for osteopathic students [31]. However, we hope that increased participation of osteopathic graduates in orthopedic surgery training programs will result in the continued expansion of osteopathic orthopedic surgeons completing fellowship training, including in foot and ankle surgery.

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(AOAO – Annual Meeting), and also serves on the Social Media Advisory Board for FAI. The other authors state no conflict of interest.

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