

# Orthopedic Sub-Specialties Vary in Representation of Female Fellowship Program Directors

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## INTRODUCTION:

Orthopedics remains the medical specialty with the lowest percentage of female physicians. Within the field's nine sub-specialties, existing percentages of female surgeons and rates of entry of female candidates vary widely. It is not clear what factors are driving this uneven dispersal, but mentorship is a previously identified factor affecting women's decision to choose a given sub-specialty. This raises the question of if having female fellowship program directors would influence candidate choices. To date, no one has reported on orthopaedic fellowship program director genders, a potentially important factor for female applicants in choosing a subspecialty

Goal of this study is to report on fellowship program director (PD) genders within orthopedic subspecialties and quantify the number of training positions represented by female PDs. To additionally compare academic ranks and h-indices, a metric of research productivity, of male and female PDs within each subspecialty.

## METHODS:

We identified orthopedic fellowships accepting applicants for the 2023-2024 cycle for the eight sub-specialties utilizing the San Francisco Match program. These were adult reconstructive orthopedics, orthopedic oncology, foot and ankle surgery, shoulder and elbow surgery, pediatric orthopedics, sports medicine, spine surgery, and orthopedic trauma. Subspecialty program lists and specific fellowship pages were used to identify the fellowship program director's gender and number of training positions offered. Faculty pages and online resumes were used to determine program director academic rank, and Scopus author search was used to determine H-index. For each subspecialty, we calculated the percentage of fellowship program and fellowship positions led by female program directors. We compared academic ranks and h-indices between male and female program directors. Statistical significance was defined as a P-value of <0.05.

## RESULTS:

For orthopaedic fellowships overall, female program directors led 4.7% of programs and 3.4% of fellowship positions. Female leadership varied widely within the subspecialties, being highest in orthopedic oncology (20% programs, 18.5% positions) and pediatric orthopedics (13.3% program, 9.6% positions) and lowest in sports (2.2% programs, 1.2% positions) and joints (0.9% programs, 0.5% positions). Female fellowship PDs were more likely to be assistant professors than their male counterparts (39% vs. 22%), and less likely to be full professors (17% vs. 33%), but these differences were not statistically significant (P=0.13). H-index could not be calculated for 2 sub-specialties with only 1 female PD. In the 6 subspecialties for which an H-index would be calculated, five had no significant difference between the genders. H index was significantly higher for male PDs compared to female PDs for pediatric orthopedics (17.5±11.8 vs. 6.3±4.9, P=0.028).

## DISCUSSION AND CONCLUSION:

Women remain underrepresented as orthopedic fellowship program directors. There is significant variation in representation amongst the subspecialties. Female program directors do not differ significantly from their male counterparts in academic rank for any subspecialty, or in h-index in 5/6 analyzed subspecialties.

Table 2: Academic Ranks of Orthopedic Fellowship Program Directors by Gender

	Male			Female		
	Assistant	Associate	Professor	Assistant	Associate	Professor
Trauma	19	19	28	7	1	1
Oncology	5	5	6	0	2	2
Sports	12	26	31	28	1	0
Pediatrics	12	12	14	3	3	0
F+A	15	11	10	13	1	1
S+E	5	11	13	16	1	0
Arthroplasty	31	22	23	32	1	0
Spine	19	18	41	11	1	0
Total (# by Gender)	112 (22%)	118 (23%)	166 (33%)	110 (22%)	9 (39%)	4 (17%)

F+A=Foot and Ankle, S+E=Shoulder and Elbow

Table 1: Orthopedic Fellowship Programs and Positions, by Subspecialty

	Trauma	Oncology	Sports	Pediatrics	F+A	S+E	Arthroplast	Spine	All
2023 Programs	65	20	93	45	49	33	188	77	490
2023 Positions	98	27	242	73	79	43	286	144	912
# Lead by Women	4	4	2	6	3	1	1	2	23
% Lead by Women	6.2%	20.0%	2.2%	13.3%	6.1%	3.0%	0.9%	2.6%	4.7%
# Lead by Women	5	5	3	7	6	1	1	3	31
% Lead by Women	5.1%	18.5%	1.2%	9.6%	7.6%	2.3%	0.5%	2.1%	3.4%

F+A=Foot and Ankle, S+E=Shoulder and Elbow

Table 3: Research H-Index of Orthopedic Fellowship Program Directors by Gender and Specialty

	Male		Female		All	P
	Mean	Median	Mean	Median		
Trauma	19.7 (13.8)	18	9.3 (3.5)	8	19.0 (13.7)	0.14
Oncology	24.2 (16.0)	21	22.5 (9.4)	21.5	23.9 (14.9)	0.84
Sports	24.4 (17.3)	22	18 (2)	18	24.5 (17.2)	0.60
Pediatrics	17.5 (11.8)	15	6.3 (4.9)	5.5	16.0 (11.8)	0.028
F+A	14.4 (8.0)	14	17 (14.5)	11	14.5 (8.6)	0.62
S+E	25.8 (17.8)	22	27 (0)	27	25.8 (17.6)	x
Arthroplasty	17.8 (16.0)	13	10 (0)	10	17.8 (15.9)	x
Spine	25.0 (19.8)	19	8.5 (2.5)	8.5	24.6 (19.7)	0.24

F+A=Foot and Ankle, S+E=Shoulder and Elbow