

# Podiatric Medicine and Surgery Resident Authored Publications in the Journal of Foot and Ankle Surgery: A Systematic Review

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## Introduction and Purpose

By standardizing and assessing patient-centered and outcome-focused competencies during residency, the Accreditation Council of Graduate Medical Education (ACGME) oversees the transition from student to practicing physician. In the podiatric medicine and surgery residency, similar competencies are outlined by the Council for Podiatric Medical Education (CPME), specifically through document 320. CPME 320 outlines the essential elements of sponsorship, administration, program development, clinical expectations, and assessments that are necessary for initial and continued approval (1). One specific program standard entails the resident to, "Be professionally inquisitive, life-long learners and teachers utilizing research, scholarly activity, and information technologies to enhance professional knowledge and clinical practice." (Program standard 6.1G) (1).

Though both directors and residents previously cited podiatric original research as an area of weakness during the podiatric medicine and surgery training experience, incorporation of a period of required research into residency programs has been suggested (2). With an emphasis on scholarly activity over the past several years in medical and surgical residencies, there has been an increase in resident participation in research and ultimately resident authored publications across many specialties (3-5).

To our knowledge, there has been no formal investigation and analysis of research conducted by residents in the field of foot and ankle surgery. With the increase in residencies, residents, and years required for completion of training, it is thought that more resident-authored research would be published. The purpose of this study is to describe the contribution of podiatric medicine and surgery resident research in *The Journal of Foot and Ankle Surgery* (JFAS) the official publication of the American College of Foot and Ankle Surgeons (ACFAS). The primary goal of this systematic review was to identify the geographic distribution and trends of different types of research published by podiatric medicine and surgery residents over a ten-year period. Secondary goals of this study were to compare recent resident publication trends with those trends prior to the mandatory three-year residency.

## Methods

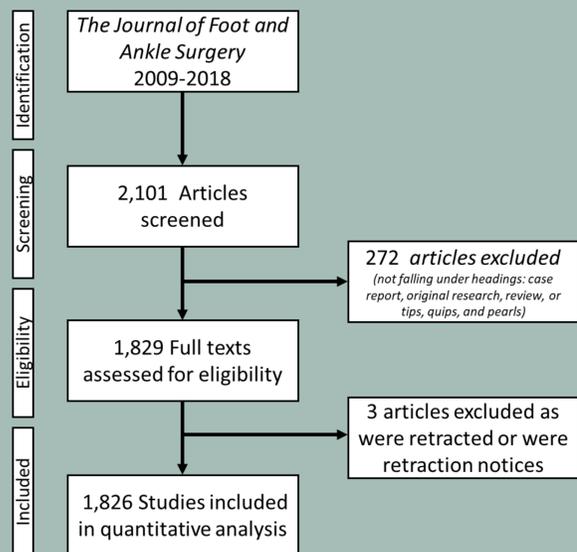


Figure 1: Flow chart of study selection following identification of journal that fit inclusion criteria.

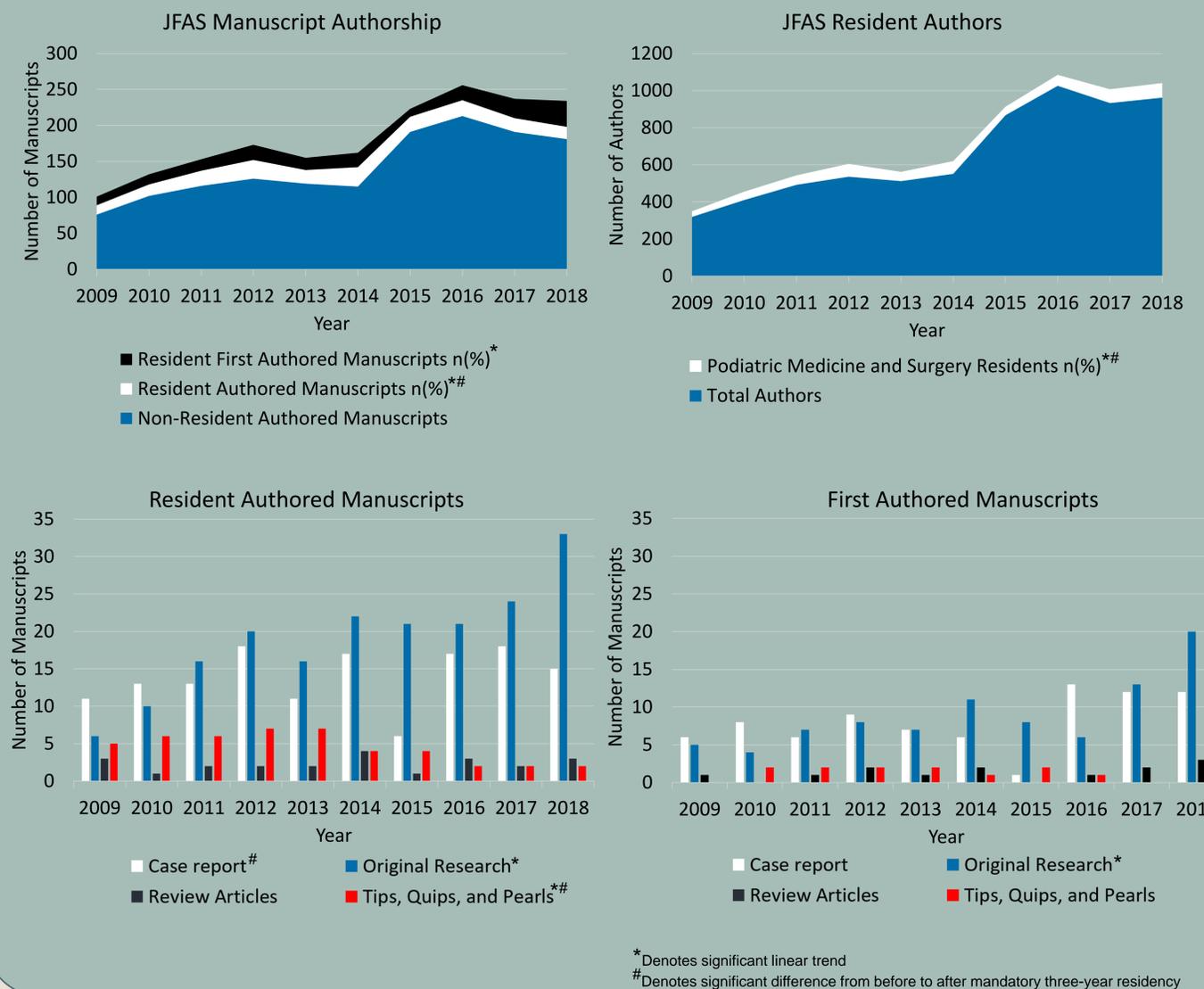
## Statistical Analysis

Type of article and the number of authors and resident authors in each manuscript was recorded over the ten-year period. Non-parametric linear regression was used to analyze trends in the number of residents who contributed to or published articles. The number of resident publications was then separated on an ordinal scale to identify trends in publications with one, two, and three or greater residents per manuscript. The Cusick test for trend was then used to identify any changes in number of resident authors with intervals of 2 years to increase test sensitivity. Fisher's exact test was used to assess differences in categorical data before and after the 3-year residency was set into place (July 2011). A *p* value of  $\leq 0.05$  was considered statistically significant.

## Results

	Publications			Authors	
	All	Resident Authored (n%)	Resident First Authored (n%)	All	Resident (n%)
Case Reports	692	139 (20.09)	80(11.56)	2539	193(7.61)
Original Research	895	189(21.12)	89(9.94)	3925	287(7.31)
Review Articles	94	23(24.47)	13(13.83)	313	34(10.86)
Tips, Quips, and Pearls	145	45(31.03)	13(8.97)	403	58(14.39)
<b>Total</b>	<b>1826</b>	<b>396(21.69)</b>	<b>195(10.68)</b>	<b>7180</b>	<b>572(7.97)</b>

Table 1: Distribution of resident-authored and resident- first authored publications, 2009-2018.



## Geographic Distribution

Resident Authored Publications by ACFAS Region

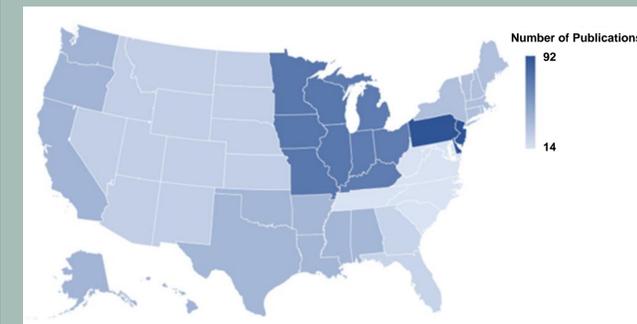


Figure 2: Geographic distribution of the number of resident-authored publications by ACFAS regions, 2009-2018.

## Discussion

Evidence-based medicine remains imperative to the advancement of podiatric medicine and surgery as displayed by the growing body of research over the past decades (6-8). The results of this study show that research activity in podiatric residency has been gaining traction over the years. These results could be due to an increase in the amount of time residents have to complete projects after July 2011, one of three identified barriers to participation in research along with difficulties with co-authors and research being a low-perceived priority (9).

An increase in scholarly activity could also be due to the evolving curriculum of residency programs (10). Studies revealed that programs with the highest levels of participation made research activity a requirement, were led by a program director that highly valued academic participation, and maintained a significant percentage of faculty available for mentorship (7). Currently, residents include the lack of time dedicated to research, availability of mentors, absence of research curricula, shortage of funding, and lack of perceived value as barriers to research participation (11-12). Recent studies analyzing foot and ankle surgery residents share this sentiment, showing that activities of lesser value (wasted time spent waiting for patients to be brought back to the operating room, test results, or any other unexpected workday delays) take away from more valuable opportunities such as education, research, operating room, and patient care (13). As CPME conducts periodic reviews and revisions of its standards, requirements, and procedures, future guidelines could promote curricula that encourage resident academic goals while maintaining their clinical training. Though such time may take residents away from clinical duties, studies show these opportunities increase resident satisfaction during training (13).

In conclusion, we found that resident participation in research through the number of authors as well as number of resident-authored publications has increased over the past decade. Though the number of residents has not increased in proportion to all authors, the number of resident first-authorships has undergone a proportional increase to all resident authored papers. These findings illustrate that residents have increased their role in scientific inquiry regarding foot and ankle surgery. The results of this investigation could be used to evaluate the current state of foot ankle surgery residency programs and develop or improve a residency program's research curriculum.

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