

4-3-2018

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## Citation

FIU Herbert Wertheim College of Medicine Affiliates, "The Progression of Gender Disparity between Orthopedic and General Surgery Residencies" (2018). *All Publications*. 2738.  
<https://scholarlycommons.baptisthealth.net/se-all-publications/2738>

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# The progression of gender disparity between orthopedic and general surgery residencies

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## Purpose

Orthopedic surgery has traditionally been, and continues to be, a male-dominated field. Although the number of female orthopedic surgeons has increased over the past several decades, orthopedic surgery remains one of the most underrepresented specialties for female physicians<sup>1-3</sup>. Several factors have been suggested as possible contributors to the underrepresentation of women in orthopedic surgery, including lack of exposure to female mentors in orthopedic surgery<sup>4-5</sup>, negative perception of work/life balance<sup>4-6</sup>, traditional view of the field as “masculine”<sup>6</sup>, and belief that physical strength is essential<sup>4,6</sup>. The purpose of this abstract is to provide an analysis of the rate of increase in women in orthopedic surgery residencies compared to general surgery residencies from the years 2007 - 2016.

## Methods

The Accreditation Council for Graduate Medical Education (ACGME) Data Resource Book for the years 2007 - 2016 was used to extract data. We focused on the distribution of sex between orthopedic surgery and general surgery residencies. Proportions and crude odds ratios with corresponding 95% confidence intervals were calculated and presented.

## Results

Between the year 2007-2016, the number of female residents in both orthopedic surgery and general surgery has increased. Overall the proportion of females in general surgery has increased by almost 8.7% between the academic years of 2007-2008 through 2015-2016, while the proportion of females in orthopedic surgery has increased by only 2.4%. The odds of being female increased by 20% from 2007-2008 to 2015-2016 among orthopedic surgery residency (OR 1.20; 95% CI 1.04-1.39), while odds of being female increased by 42% from 2007-2008 to 2015-2016 in a general surgery residency (OR 1.42; 95% CI 1.32-1.52).

Table 1: Proportions and Odds Ratios of Women in Orthopedic and General Surgery Residencies

Residency Type	Gender	2015-2016 N(%)	2007-2008 N(%)	OR (95% CI)
Orthopedic Surgery	Females	517(14.0)	379(11.6)	1.20 (1.04-1.39)
	Males	3058(83.0)	2695(82.7)	Reference
General Surgery	Females	2825(36.1)	2032(27.4)	1.42 (1.32-1.52)
	Males	4696(59.9)	4790(64.7)	Reference

Table 1. The odds of being female increased by 20% from 2007-2008 to 2015-2016 among orthopedic surgery residency, while odds of being female increase by 42% from 2007-2008 to 2015-2016 in a general surgery residency

Figure 1: Percent of Females in Orthopedic versus General Surgery, Academic Years 2007-2016

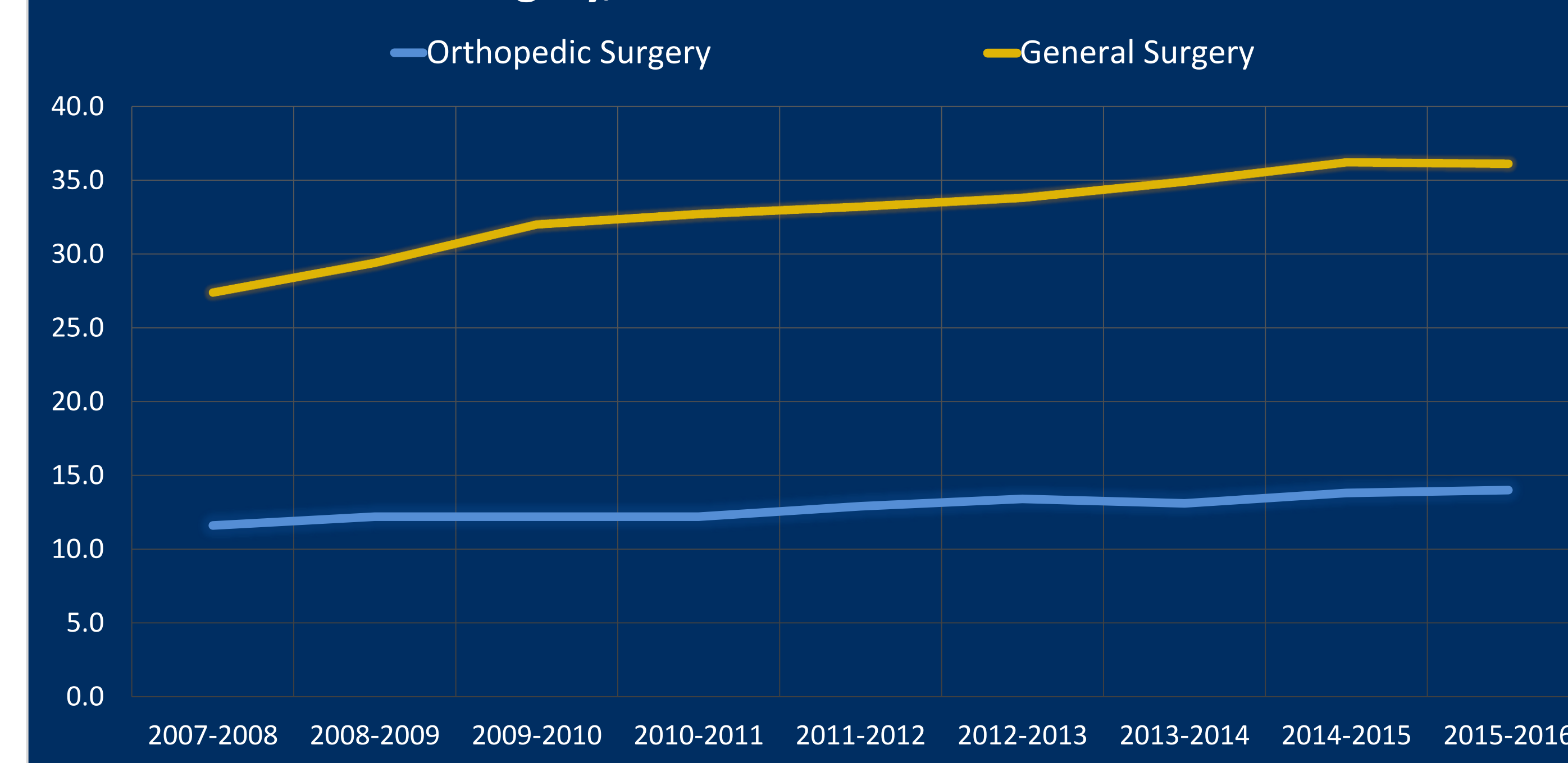


Figure 1. Overall the proportion of females in general surgery has increased by almost 8.7% between the years of 2007-2008 through 2015-2016 academic years, while the proportion of females in orthopedic surgery has increased by only 2.4%

## Discussion

Physician diversity is an integral component of maximizing quality of patient care and improving patient-physician relationships<sup>1,8</sup>. Our results show that despite increasing numbers of female U.S. medical school graduates, the rate of increase of females entering the field of orthopedic surgery has been minimal and is remarkably slower than that of females entering general surgery. It has been proposed that in order to increase the presence of female orthopedic surgeons, the number of available female mentors and role models in orthopedics<sup>1,2,4,6,9</sup> as well as early exposure to orthopedics during medical school<sup>1,4,9</sup> should be increased and emphasized. Multiple programs have been founded to implement these changes, including pipeline programs to provide early mentorship, clinical experiences, research exposure, and mock surgical experiences<sup>10,11</sup>.

## Implications for Practice

Historically and currently, a significant gender disparity exists in the field of orthopedic surgery. Our goal, in addition to recognizing and commending the increase in female presence over the past ten years, is to call notice to the slow increase in comparison to general surgery residencies. We urge the Orthopedic community to continue their efforts in providing mentoring and resources to females interested in entering a career in Orthopedics, while simultaneously seeking other outlets and interventions to accelerate growth.

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