

# Examining the Impact of COVID-19 on Orthopaedic Surgery Residents Training: Analysis of Orthopaedic Trauma Case Volume

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## INTRODUCTION:

The purpose of this study is to analyze the number of orthopaedic trauma surgery procedures performed by orthopaedic residents graduating from Accreditation Council for Graduate Medical Education (ACGME) approved residency programs within the United States over the past five years. We hypothesized that the number of orthopaedic trauma surgery cases performed by graduating residents was unaffected by the COVID-19 pandemic.

## METHODS:

We evaluated the ACGME national resident case-log reports among graduating residents between 2018-2022. The data was categorized into surgical subspecialty and Current Procedural Terminology (CPT) code grouping. Statistical analysis was completed using T-test and one-way ANOVA with Tukey post-hoc test.

## RESULTS:

In total, 3,146 resident case-logs were analyzed between 2018-2022. There was no significant difference between before (2018-2020) versus during (2020-2022) the pandemic in the number of procedures performed involving the shoulder (25.2 +/- 18 vs. 26.5 +/- 16; p=0.195), humerus/elbow (59.2 +/- 21 vs. 60.6 +/- 22; p=0.975), and foot/toes (79.9 +/- 37 vs. 79 +/- 31; p=0.8504). Compared to before the pandemic, there was an increase in the number of procedures involving fracture and/or dislocation management in forearm/wrist (51.8 +/- 24 vs. 56.4 +/- 26; p=0.002), pelvis/hip (93.2 +/- 37 vs. 104.2 +/- 42; p<0.001), femur/knee (71 +/- 27 vs. 79 +/- 31; p<0.001), and leg/ankle (102.6 +/- 36 vs. 109.2 +/- 38; p<0.001). Additionally, there was no change in the number of closed reductions performed between, before, and during the pandemic (131.8 +/- 86 vs. 148.1 +/- 84, p<0.01).

## DISCUSSION AND CONCLUSION:

Despite the global impact of COVID-19, resident surgical case-volume in orthopaedic trauma surgery was not significantly hindered. In fact, there was an increase in orthopaedic trauma cases performed in all areas including forearm/wrist, pelvis/hip, femur/knee, leg/ankle, and closed reductions. Even though COVID-19 has had significant impact on the US healthcare system, it did not impact graduating orthopaedic resident trauma surgical experience.

**Table 1:** Accreditation Council for Graduate Medical Education Annual Change in Trauma-

Surgery Case Volume Among Graduating Residents Between 2018-2022.

Number of Procedures (SD)	Residents Graduating in 2018-2020 (n=1449)	Residents Graduating in 2020-2022 (n=1697)	P value
Shoulder	25.2 (18)	26.5 (16)	0.195
Humerus/Elbow	59.2 (21)	60.6 (22)	0.975
Foot/Toes	79.9 (37)	81.7 (43)	0.851
Forearm/Wrist	51.8 (24)	56.4 (26)	<b>p&lt;0.01</b>
Pelvis/Hip	93.2 (37)	104.2 (42)	<b>p&lt;0.001</b>
Femur/Knee	71 (27)	79 (31)	<b>p&lt;0.001</b>
Leg/ankle	102.6 (36)	109.2 (38)	<b>p&lt;0.001</b>
Closed Reductions	131.8 (86)	148.1 (84)	<b>p&lt;0.01</b>