

## The Increasing Trend in Research Among Orthopedic Residency Applicants is Significant to Matching: A Retrospective Analysis

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**Abstract :** Orthopedic surgery is currently considered one of the most competitive specialties that medical students can apply to for residency training. As evidenced by increasing United States Medical Licensing Examination (USMLE) scores, overall grades, and publication, presentation, and abstract numbers, this specialty is getting increasingly competitive. The recent change of USMLE Step 1 scores to pass/fail has resulted in additional challenges for medical students planning to apply for orthopedic residency. Until now, these scores have been a tool used by residency programs to screen applicants as an initial factor to determine the strength of their application. With USMLE STEP 1 converting to a pass/fail grading criterion, the question remains as to what will take its place on the ERAS application. The primary objective of this study is to determine the trends in the number of research projects, abstracts, presentations, and publications among orthopedic residency applicants. Secondly, this study seeks to determine if there is a relationship between the number of research projects, abstracts, presentations, and publications, and match rates. The researchers utilized the National Resident Matching Program's Charting Outcomes in the Match between 2007 and 2022 to identify mean publications and research project numbers by allopathic and osteopathic US orthopedic surgery senior applicants. A paired t test was performed between the mean number of publications and research projects by matched and unmatched applicants. Additionally, simple linear regressions within matched and unmatched applicants were used to determine the association between year and number of abstracts, presentations, and publications, and a number of research projects. For determining whether the increase in the number of abstracts, presentations, and publications, and a number of research projects is significantly different between matched and unmatched applicants, an analysis of covariance is used with an interaction term added to the model, which represents the test for the difference between the slopes of each group. The data shows that from 2007 to 2022, the average number of research publications increased from 3 to 16.5 for matched orthopedic surgery applicants. The paired t-test had a significant p-value of 0.006 for the number of research publications between matched and unmatched applicants. In conclusion, the average number of publications for orthopedic surgery applicants has significantly increased for matched and unmatched applicants from 2007 to 2022. Moreover, this increase has accelerated in recent years, as evidenced by an increase of only 1.5 publications from 2007 to 2009 versus 5.0 publications from 2018 to 2022. The number of abstracts, presentations, and publications is a significant factor regarding an applicant's likelihood to successfully match into an orthopedic residency program. With USMLE Step 1 being converted to pass/fail, the researchers expect students and program directors will place increased importance on additional factors that can help them stand out. This study demonstrates that research will be a primary component in stratifying future orthopedic surgery applicants. In addition, this suggests the average number of research publications will continue to accelerate. Further study is required to determine whether this growth is sustainable.

**Keywords :** publications, orthopedic surgery, research, residency applications

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