



Publishing Characteristics of Sports Medicine Research Over a 15-Year Time Interval: A Review of the Journal of Bone and Joint Surgery from 2007-2021

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Introduction

- Orthopaedic surgery continues to have a wide gender gap in leadership, authorship, and residency and fellowship applicants.
- Only 17% of all orthopaedic surgery residents were female.
- 10-12% of all orthopaedic surgery residency applications identify as female.
- 3% of all program directors being female.
- Female first authorship in the top orthopaedic journals was relatively stagnant at only 4% from 1987-2017.
- The purpose of this study was to assess both the quality of the current literature and trends in diversity and inclusion by evaluating publishing characteristics of sports medicine studies in the *Journal of Bone and Joint Surgery*.

Methods

- The Journal of Bone and Joint Surgery (JBJS) advanced search function was used to access all sports medicine related studies published from January 1, 2007, to December 31, 2021.
- Studies were organized into 3 different five-year groups.
- The following data was collected from each eligible study: total number of authors, sex of authors, terminal academic degrees of first and last authors, study type, country of origin, the level of evidence (LOE) as reported by JBJS-A, the number of references used by the study, the number of times the study was cited as noted by PubMed search, and the use of patient reported outcome measures (PROM).
- Studies were excluded if they were editorials, orthopaedic forum, specialty updates, concept reviews, commentaries, announcements, events, errata, retracted manuscripts, instructional lectures, and letters to the editor.

Results

Figure 1. Authorship, References, Citations, and Study Design Trends for 2007-2021.

	2007-2011	2012-2016	2017-2021
Total no. of studies published	202	207	104
Median no. of references per study	31	31	36
Median no. of citations per study	83	61	16
First authors by sex	22 F, 180 M	26 F, 181 M	10 F, 94 M
Last authors by sex	12 F, 188 M	26 F, 178 M	8 F, 94 M
Type of study (no. [%])			
Clinical therapeutic	108 (53.47)	89 (43.00)	48 (46.15)
Clinical prognostic	36 (17.82)	42 (20.29)	26 (25.00)
Clinical diagnostic	20 (9.90)	23 (11.11)	2 (1.92)
Other	38 (18.81)	53 (25.60)	28 (26.92)

Figure 2. Male and Female Authorship Over Time

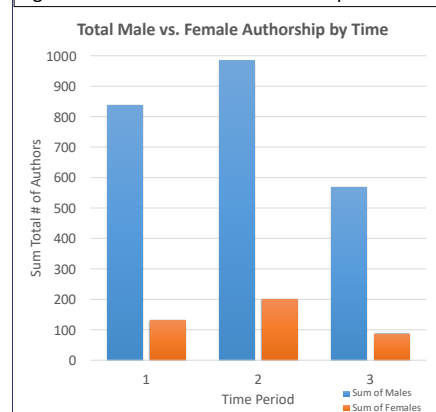
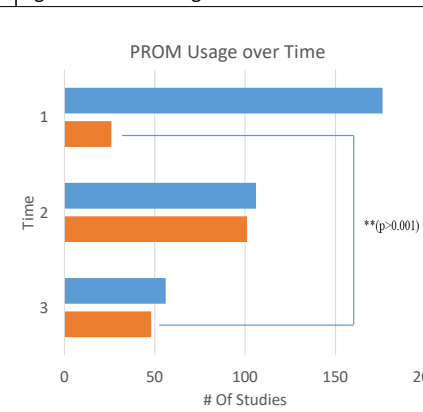


Figure 3. PROM Usage Over Time



Results

Study Types

- Clinical therapeutic was most popular study type n= 246 (48.1%) consistent across time
- Clinical diagnostic studies significantly decreased over time from 21 (10.5%) in 2007-2011 to 2 (1.9%) in 2017-2021 (p=0.003)

Quality of Research

- PROM use increased significantly (p>0.001), from 12.9% (n= 26) of studies reporting use of PROMs in 2007-2011 to 47.5% (n=48) in 2017-2021
- Number of times a study was cited decreased over time, references per study was consistent over time, avg. = 34

Diversity of Authors

- Avg. female authors per study was stable at 0.69 to 0.84, males per study increased from 4.1 to 5.4
- Female first and last authorship remained consistent over time ; 9.6% and 7.8% respectively
- First and last authors were majority MD (69.3%; 75.2%)
- USA accounted for 64.1% (n=329) of studies

Conclusion

- Quality of research has improved over the 15-year period
- Gender gap persists, only 11% of all first authors and only 9% of senior authors were female.
- Room for improvement of authorship diversity in orthopaedic sports medicine research, despite areas of growth

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Disclosures

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Jack Blitz, MD– NONE

Tatjana Mortell, BS– NONE

Victoria K. Ierulli, MS– NONE

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- AAOS: Board or committee member
- American Journal of Sports Medicine Electronic Media: Editorial or governing board
- American Orthopaedic Association: Board or committee member
- American Orthopaedic Society for Sports Medicine: Board or committee member
- Arthrex, Inc: Paid consultant; Paid presenter or speaker
- Arthroscopy: Editorial or governing board
- Arthroscopy Association of North America: Board or committee member
- International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine: Board or committee member
- Ortho Info: Editorial or governing board
- Ruth Jackson Orthopaedic Society: Board or committee member
- The Forum: Board or committee member

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