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Comparing Orthopedic Randomized Control Trials Published in High-Impact Medical and Orthopedic Journals

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PURPOSE
To compare study characteristics, methodologic quality and outcome direction among operative randomized orthopedic trials published in high-impact medical and orthopedic journals and to identify study attributes associated with greater exposure and impact.

MATERIALS AND METHODS
- RCTs published between January 2010-December 2020 in 6 high-impact medical journals and 10 high-impact orthopedic journals were analyzed.
- RCTs reporting outcomes after an orthopedic surgical intervention compared with nonsurgical interventions or a less-invasive/extensive surgical procedure were included.
- Study characteristics, methodology, outcomes, and Altmetric data including citation rate and Altmetric attention scores (AAS), were collected.
- Primary study outcomes were categorized as positive (favoring operative/more extensive surgery), negative (favoring nonoperative/less extensive surgery), or neutral.
- Methodological quality of each study was graded by the Jadad scale.
- Linear regressions were utilized to assess for study features associated with AAS and citation rates.

RESULTS
- 128 RCTs were included, 26 from medical and 102 from orthopedic journals.
- Studies published in medical journals included more authors (14.0 ± 9.0 vs. 6.3 ± 2.8, P<.001), larger sample sizes (277 ± 285 vs. 103 ± 82, P<0.001), more participating institutions (14 ± 18 vs. 3.5 ± 5.8, p<.001), and more often received funding (100% vs. 46%, P<0.001).
- Average methodologic quality score did not differ between medical and orthopedic journals (Jadad Score: 3.2 vs. 2.9, P=0.12).
- After adjustment with multivariable linear regressions, publication in a medical journal was the only factor significantly associated with annual citation rate (β =1.48, CI [0.98 – 1.98], P<0.001), and AAS (β =287.3, CI [162.5 – 412.1], P<0.001).
- The direction of the primary study outcome did not differ between studies in medical and orthopedic journals (Positive: 26.9% vs. 32.4%, P=0.59; Negative: 7.7% vs. 15.7%, P=0.53; Neutral: 65.4% vs. 52%, P=0.22).

DISCUSSION
- Previous results support and complement our finding that the direction of study results do not differ between medical and orthopedic journals, by demonstrating that the direction of study results do not influence the likelihood of acceptance for publication in either type of journal.
- Our results suggest that screening studies by AAS may disproportionately promote RCTs published in medical journals, despite comparable quality to those published in orthopedic journals.
- With a larger sample size that previous studies, our study may more accurately depict the digital impact of orthopedic RCTs published in medical journals.

CONCLUSION
- High-impact medical and orthopedic journals publish orthopedic RCTs with negative or neutral findings at a similar rate and have comparable methodologic quality but research published in medical journals receives more attention.