

# Instagram Outperforms Twitter in Driving Social Media Engagement Among Sports Medicine Orthopaedic Surgeons



Alexis B. Edmonson, M.S., Sean C. Clark, M.S., Victoria K. Ierulli, M.S., and Mary K. Mulcahey, M.D.

**Purpose:** To determine the content posted by sports medicine orthopaedic surgeons on Instagram and Twitter and to evaluate the associated engagement. **Methods:** Data were collected from sports medicine orthopaedic surgeons' Instagram profiles and Twitter profiles between December 2020 and June 2022. The median number of total number of likes, comments, and retweets was calculated. The content of posts from both platforms was divided into the following categories: personal life, research, patient testimony, day in the life, pathway to becoming a physician, clinical cases, medical facts, and team coverage. **Results:** Data from 71 Instagram profiles and 39 Twitter profiles were used in this study. A total of 1,193 posts were identified on Instagram and 1,284 posts were identified on Twitter. The personal life category had the greatest number of posts on Instagram (303, 25.4%), whereas the medical facts category had the greatest number of posts on Twitter (251, 19.5%). Pathway to becoming a physician had the greatest median number of likes on both Instagram (97.5, range 48-2,467) and Twitter (19, range 0-50) and the greatest median number of comments on Instagram at 16 (range 1-203). The team coverage category on Instagram had the greatest percentage of likes per follower at 9.9%. A significantly greater percentage of orthopaedic surgeons posted about day in the life content, medical facts, and research on Twitter in comparison with Instagram. Instagram resulted in significantly more social media engagement than Twitter in all 8 categories ( $P < .05$ ). **Conclusions:** Instagram resulted in significantly more social media engagement across all categories in comparison with Twitter with team coverage, personal life, and pathway to becoming a physician being the most popular categories. **Clinical Relevance:** The information learned in this study may help sports surgeons understand how they may best utilize social media to engage with others and enhance their clinical practice.

Social media has become a convenient way for people to communicate and connect. There has been an increase in the use of social media over the past several years, as well as the amount of information shared via these outlets. Instagram and Twitter are 2 of the most-used social media platforms. Approximately 115 million Americans have Instagram accounts, and this is projected to grow to 127 million users by 2023.<sup>1</sup>

In addition, approximately 77,000,000 Americans have an active Twitter account as of May 2022.<sup>2</sup>

Previous research has evaluated patient perceptions of physicians on social media. Donnally et al.<sup>3</sup> evaluated the presence of spine surgeons on social media to determine whether this affected their patient review scores and number of comments made through websites such as Health Grades. The authors found that physicians who had a social media presence received a greater number of ratings.<sup>3</sup> In 2019, the authors conducted a subsequent study to determine whether there was a correlation between spine surgeons' website ratings and their presence on Facebook, Twitter, and Instagram. The authors found that of 206 surgeons, 148 (71.9%) had a social media account, and surgeons with a social media account had greater scores on physician rating websites.<sup>4</sup>

A cross-sectional study performed by Sama et al.<sup>5</sup> in 2021 demonstrated that orthopaedic surgeons who posted on social media had greater patient ratings than orthopaedic surgeons who were not on social media.

From Tulane University School of Medicine, New Orleans, Louisiana, U.S.A. (A.B.E., S.C.C., V.K.I.); and Department of Orthopaedic Surgery & Rehabilitation, Loyola University Medical Center, Maywood, Illinois, U.S.A. (M.K.M.).

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Address correspondence to Mary K. Mulcahey, M.D., 2160 S. First Ave., Maywood, Illinois 60153, U.S.A. E-mail: [mary.mulcahey.md@gmail.com](mailto:mary.mulcahey.md@gmail.com)

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The authors evaluated 102 orthopaedic surgeons based on physician rating websites and patient-reported wait times. They noted that 63 (62.4%) surgeons were active on at least one social media platform. The authors hypothesized that the increase in patient ratings seen in physicians with a social media presence could be due to increased patient access and interaction with their physicians due to their online presence.

In 2020, Gross et al.<sup>6</sup> surveyed 267 orthopaedic surgeons to determine their opinion on the use of social media and interpretation of physician rating websites. Ninety-five (35.5%) orthopaedic surgeons in this study had a social media account. Most of the orthopaedic surgeons reported that content regarding patient education was the most common theme of posts that the surgeons shared on social media. However, the authors found that the increase in social media use seen among orthopaedic surgeons was used primarily to become more popular in the community rather than share clinical cases or medical facts.

Chellamuthu et al.<sup>7</sup> analyzed 1,023 tweets between May 1, 2021, and June 30, 2021, from orthopaedic surgeons, orthopaedic residents, medical students interested in orthopaedic surgery, physicians in non-orthopaedic specialties, the public (such as patients), implant companies, and orthopaedic organizations that used #OrthoTwitter. The authors evaluated the number of likes, comments, and retweets for posts shared based on the content (e.g., orthopaedic cases and education), format (e.g., text, images, or mix), and purpose (informative or entertainment) of each tweet. They found that more than 50% of the tweets contained informative content or were posted for educational purposes, and that this category or type of post received the most likes. The authors concluded that tweets that contained some form of media, such as images or videos, received more likes than posts that did not.

The aforementioned study discussed the importance of Twitter use in the orthopaedic community and how observing the interaction with different types of tweets can influence future surgeons' social media posts. The purposes of this study were to determine the content posted by sports medicine orthopaedic surgeons on Instagram and Twitter and to evaluate the associated engagement. We hypothesized that surgeons who shared content related to clinical cases would receive a greater number of likes, comments, and/or retweets compared with the other categories.

## Methods

Orthopaedic surgeons who specialize in sports medicine were selected for inclusion in this study. They also must have had an Instagram and/or Twitter profile that shared posts from December 2020 and June 2022. The orthopaedic surgeons included in the study received subspecialty training in either sports medicine or

shoulder and elbow ([Appendix Table 1](#), available at [www.arthroscopyjournal.org](http://www.arthroscopyjournal.org)). Surgeons' profiles were excluded if they did not have an active Twitter/Instagram account and if they did not post during the specified data-collection period. The following data were collected: total number of posts, follower base, username, content category, and responses to posts (i.e., likes, comments, and retweets). The content categories for posts were clinical cases, day in the life, medical facts (informative content), pathway to becoming a physician (information shared on their journey to becoming a sports medicine orthopaedic surgeon), patient testimony (comments shared by the surgeons' patients based on their encounters), personal life (family, extracurriculars), research (studies published by the surgeon), and team coverage. The number of posts that fit into each of the 8 aforementioned categories was recorded for each orthopaedic surgeon. Also, the median number of likes, comments, and retweets were calculated from the surgeons' posts on Instagram and Twitter.

## Statistical Analysis

Since each orthopaedic surgeon had a different number of followers, an attempt was made to standardize how social engagement was measured. This was quantified by dividing the number of likes a post received by the number of followers, with the value being reported as a percentage. Continuous variables were reported as median values. Categorical variables were reported as frequencies with percentages. Differences between continuous variables were evaluated using a 2-sample, 2-tailed, Mann–Whitney  $U$  test. Differences between categorical variables were evaluated using a  $\chi^2$  analysis. All data were analyzed using R statistical software (R Foundation for Statistical Computing, Vienna, Austria). A  $P < .05$  was considered significant.

## Results

Eighty-seven subjects were selected for analysis of their Instagram profiles and 86 were chosen for Twitter profile analysis. After examining the Instagram and Twitter profiles, 16 orthopaedic surgeons were excluded from the Instagram analysis and 47 orthopaedic surgeons were excluded from the Twitter analysis. The final sample was 71 subjects (53 male, 18 female) in the Instagram analysis and 39 (30 male, 9 female) in the Twitter analysis.

### Instagram

The median number of Instagram followers was 1,302 (range 183–593,000). The total number of Instagram posts for all orthopaedic sports medicine surgeons during the specified period was 1,193. The personal life category had the greatest number of posts (25.4%, 303/

**Table 1.** Median Number of Likes and Comments per Category for Instagram Posts

Category	Likes	Comments
Clinical cases	58.0	4.0
Day in the life	96.5	4.0
Medical facts	49.0	1.0
Pathway to becoming a physician	97.5	16.0
Patient testimony	56.0	1.0
Personal life	96.0	5.0
Research	56.0	2.0
Team coverage	97.0	3.0

1,193) with a median of 96 likes (range 13-9,764) and 5 comments (range 0-160). The category with the least number of posts was pathway to becoming a physician (1.0%, 12/1,193). The pathway to becoming a physician category had the greatest median number of likes (97.5, range 48-2,467) and the greatest median number of comments (16, range 1-203). The medical facts category had the lowest median number of likes (49, range 6-242). The patient testimony and medical facts categories had the lowest median number of comments (1, range 0-23, range 0-97, respectively) (Table 1).

### Twitter

The median number of Twitter followers was 3,018 (range 257-16,400). The total number of tweets for all sports medicine orthopaedic surgeons during the specified period was 1,284. The medical facts category had the highest number of tweets (251, 19.5%) with a median of 4 likes (range 0-110) and 0 retweets (range 0-20). The research category followed with 243 (18.9%) tweets having a median of 8.0 likes (range 0-134) and 1 retweet (range 0-30). The category with the greatest responses was pathway to becoming a physician, with a median of 19 likes (range 0-5,057) and 1.5 retweets (range 0-475). Pathway to becoming a physician also had the lowest number of tweets, with a total of 8 posts. The patient testimony category had the lowest median number of likes (4, range 0-82) and retweets (0, range 0-31) (Table 2).

### Instagram Versus Twitter

The number of sports medicine orthopaedic surgeons that posted on Instagram and Twitter in each individual category compared with the total number of sports medicine orthopaedic surgeons on Instagram and Twitter is shown in Table 3. A significantly greater percentage of orthopaedic surgeons posted about day in the life content, medical facts, and research on Twitter in comparison with Instagram ( $P < .05$ ). The median number of likes per follower in each content category is summarized in Table 4. Posts on Instagram, in comparison with Twitter, resulted in a significantly greater median number of likes per follower in all 8 content categories ( $P < .05$ ).

**Table 2.** Median Number of Likes and Retweets per Category for Twitter Posts

Category	Likes	Retweets
Clinical cases	7.5	1.0
Day in the life	16.0	1.0
Medical facts	4.0	0
Pathway to becoming a physician	19.0	1.5
Patient testimony	4.0	0
Personal life	12.0	0
Research	8.0	1.0
Team coverage	10.5	1.0

## Discussion

In this study, we found that based on the number of likes per follower, Instagram significantly outperformed Twitter in terms of social media engagement across all categories, with posts in the team coverage, personal life, and pathway to becoming a physician categories having the most engagement. It was also observed that sports medicine orthopaedic surgeons with a larger follower base on Instagram received increased number of likes on individual posts. The physician with the greatest number of followers on Instagram received the greatest number of likes on their posts in 5 of the 8 total categories: patient testimony, personal life, clinical cases, medical facts, and day in the life. Thus, increasing the number of followers, posting on Instagram rather than Twitter, and having posts about team coverage, personal life, and pathway to becoming a physician are more likely to lead to increased social media engagement. Sports medicine orthopaedic surgeons may take this information into account to maximize the impact of content shared via social media.

Similarly, in a study in 2021, Wang et al.<sup>8</sup> evaluated the number of posts made on Instagram and Twitter using the search terms #OrthopedicSurgery, #Orthopedics, and #OrthopedicSurgeon to determine common sources of orthopaedic-related posts, different content shared on social media, and how the spreading of information on these platforms can aid in medical students interested in orthopaedic surgery. The authors concluded that there was more engagement based on the number of likes on Instagram posts than on Twitter posts. They also determined that orthopaedic surgeons shared more informative content and posts, including their personal life on Instagram, whereas posts shared on Twitter contained mainly advertisement-related content.<sup>8</sup> These results demonstrate a similar trend seen in our study, as the greatest number of social media posts observed on Instagram were in the personal life category (25.4% 303/1,193). In addition, Abbas et al.<sup>9</sup> evaluated the presence of 158 orthopaedic surgery residency programs on Facebook, Instagram, and Twitter to determine whether there was a correlation between content of posts made on these

**Table 3.** Percentage of Orthopaedic Sports Medicine Surgeons Who Posted in Each Category on Instagram and Twitter

Category	Instagram	Twitter	P Value
	Percentage of Orthopaedic Surgeons (%)	Percentage of Orthopaedic Surgeons (%)	
Clinical cases	47.9	43.6	.816
Day in the life	66.2	87.2	<b>.031</b>
Medical facts	47.9	79.5	<b>.002</b>
Pathway to becoming a physician	12.7	20.5	.417
Patient testimony	35.2	41.0	.691
Personal life	66.2	69.2	.911
Research	46.5	74.4	<b>.009</b>
Team coverage	57.8	71.8	.211

Bolded values indicate statistical significance.

platforms and number of followers. The authors found that an increased total number of posts on Instagram, as well as posts containing information about the program, were highly correlated with an increased number of followers on that platform.

In contrast, Shaath et al.<sup>10</sup> showed Twitter to be more influential than Instagram. The authors analyzed the use of social media by orthopaedic journals and their corresponding impact factors. Across all the Twitter accounts of the orthopaedic journals, there were 177,543 followers in comparison with 81,739 followers across the Instagram accounts of all the orthopaedic journals. In addition, there was a significant correlation between the number of Twitter followers and the journal impact factor (Pearson correlation coefficient = 0.80,  $P < .001$ ).

A retrospective study performed by Sahu et al.<sup>11</sup> in 2020 evaluated the use of the hashtag “OrthoTwitter” as a means of connecting with other orthopaedic surgeons and to communicate medical facts via an accessible platform. The authors found that of the 5,243 tweets analyzed, only 577 (11%) of the tweets with the hashtags “orthopedic surgery” or “orthopaedic surgery” contained research or medical facts compared with 2,307 (44%) using #OrthoTwitter and pertained to research or medical facts. Most of the tweets with #OrthoTwitter were posted by orthopaedic surgeons rather than private organizations. This study demonstrated that orthopaedic surgeons could connect with each other through social media to share factual,

relevant information.<sup>11</sup> This is similar to our study, which showed that significantly more sports medicine orthopaedic surgeons posted medical facts and research content on Twitter in comparison with Instagram ( $P = .002$  and  $.009$ , respectively).

Friedman and Menendez<sup>12</sup> examined the benefits of social media in the orthopaedic community through conducting interviews with current physicians who participate in the #OrthoTwitter group. The researchers discussed three categories based on the responses from the participants’ views on social media which were promoting and sharing research, fostering more inclusive conversations, and varying approaches to engagement. Dr. Grant Garrigues stated that “social media allows you to highlight impactful research and help realize the goal of improving patient care” when asked about his views regarding posting on Twitter. The study also included a comment from Dr. Yen Shipley, who stated that “a resident can be involved in a discussion with a world-renowned surgeon, and hierarchies are gone” regarding how social media can build connections in the orthopaedic world. The results of this study concluded that the increase of social media use by orthopaedic surgeons can improve networking and sharing of information in the medical community and with the public.<sup>12</sup>

### Limitations

There are several limitations to this study. The sample size of orthopaedic surgeons included in this study was

**Table 4.** Comparison of the Median Percentage of Likes per Follower for Each Category on Instagram and Twitter

Content Category	Instagram	Twitter	P Value
	Median Percentage of Likes per Follower (%)	Median Percentage of Likes per Follower (%)	
Clinical cases	6.5	0.5	<b>&lt;.001</b>
Day in the life	4.2	0.5	<b>&lt;.001</b>
Medical facts	5.0	0.1	<b>&lt;.001</b>
Pathway to becoming a physician	8.1	0.4	<b>.017</b>
Patient testimony	4.2	0.1	<b>&lt;.001</b>
Personal life	9.3	0.3	<b>&lt;.001</b>
Research	4.4	0.3	<b>&lt;.001</b>
Team coverage	9.9	0.6	<b>&lt;.001</b>

Bolded values indicate statistical significance.



small and thus the results may not be generalizable to all sports medicine orthopaedic surgeons on Instagram and Twitter. Although an attempt was made to standardize the data by dividing the number of likes for a post by the number of followers, it is possible that individuals who liked the post may not actually follow the poster. In addition, some of the posts could have fit into more than one category, which may have skewed the results of the study.

### Conclusions

Instagram resulted in significantly more social media engagement across all categories in comparison with Twitter with team coverage, personal life, and pathway to becoming a physician being the most popular categories.

### Disclosure

All authors (A.B.E., S.C.C., V.K.I., M.K.M.) declare the following financial interests/personal relationships which may be considered as potential competing interests. Full ICMJE author disclosure forms are available for this article online, as [supplementary material](#).

### References

1. Dixon S. Instagram: number of users in the United States in 2020-2023. February 15, 2023, <https://www.statista.com/statistics/293771/number-of-us-instagram-users/>. Accessed September 9, 2023.
2. Dinesh SOM. 8 facts about Americans and Twitter as it rebrands to X. July 26, 2023, <https://www.pewresearch.org/short-reads/2023/07/26/8-facts-about-americans-and-twitter-as-it-rebrands-to-x/>. Accessed September 10, 2023.
3. Donnally CJ, McCormick JR, Li DJ, et al. How do physician demographics, training, social media usage, online presence, and wait times influence online physician review scores for spine surgeons? *J Neurosurg Spine* 2018;30:279-288.
4. Donnally CJ 3rd, McCormick JR, Pastore MA, et al. Social media presence correlated with improved online review scores for spine surgeons. *World Neurosurg* 2020;141:e18-e25.
5. Sama AJ, Matichak DP, Schiller NC, et al. The impact of social media presence, age, and patient reported wait times on physician review websites for sports medicine surgeons. *J Clin Orthop Trauma* 2021;21:101502.
6. Gross CE, Scott D, Samora JB, Khan M, Kang DG, Frank RM. Physician-rating websites and social media usage: A global survey of academic orthopaedic surgeons: AOA critical issues. *J Bone Joint Surg Am* 2022;104:e5.
7. Chellamuthu G, Muthu S, Siddamanickam S. #OrthoTwitter: Blending information, education, and entertainment online [published online October 10, 2022]. *J Bone Joint Surg Am*. doi:10.2106/JBJS.21.01370.
8. Wang CX, Kale N, Miskimin C, Mulcahey MK. Social media as a tool for engaging medical students interested in orthopaedic surgery. *Orthop Rev (Pavia)* 2021;13:24443.
9. Abbas MJ, Jildeh TR, Khalil LS, et al. Social media use continues to increase among orthopaedic residency programs in the United States. *Arthrosc Sports Med Rehabil* 2021;3:e1761-e1767.
10. Shaath MK, Kerr MS, Schwartzman JD, et al. Positive correlation between social media utilization by orthopaedic journals and impact factor. *J Am Acad Orthop Surg Glob Res Rev* 2023;7.
11. Sahu MA, Goolam-Mahomed Z, Fleming S, Ahmed U. #OrthoTwitter: Social media as an educational tool. *BMJ Simul Technol Enhanc Learn* 2021;7:277-284.
12. Friedman LGM, Menendez ME. What's important: How social media can foster connectedness: Voices from the #OrthoTwitter community. *J Bone Joint Surg Am* 2021;103:1152-1154.