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Post or Perish? Social Media Strategies for Disseminating Orthopedic Research

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Abstract

Social media usage, particularly Twitter, among scientists in academia has increased in recent years. However, Twitter's use in scholarly post-publication dissemination of orthopaedic research and musculoskeletal advocacy remains low. To enhance usage of Twitter among musculoskeletal researchers, this article reviews data supporting the professional benefits of using the platform to disseminate scholarly works. Next, we provide a linear workflow for Tweet curation, discuss the importance of data-driven decision making behind tweet curation and posting, and propose new guidelines for professional Twitter usage. Since this workflow may not eliminate all the identified barriers and new institutionalized shifts in policies regarding curation and consumption of social media on Twitter, we also briefly introduce and explore using other social media platforms. We hope this information will be persuasive and compelling to those in the orthopedic research field and be broadly applicable to others in related scientific fields who wish to disseminate findings and engage a public audience on social media. In addition, we encourage the Orthopedic Research Society (ORS) and Journal of Orthopedic Research (JOR) communities to take advantage of the many tools curated by the Wiley editorial office and the ORS social media committee to increase dissemination of their scholarly works online. Twitter and social media can assist in accomplishing our mission of creating a world without musculoskeletal limitations via the timely dissemination of orthopedic information. However, this can only be accomplished if the orthopedic research community has a unified and strong online presence actively engaged in orthopaedic research findings and news.

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Keywords

Twitter; Social Media; Altmetrics; Citations; Orthopedic Research Society; Publication Promotion

Introduction

Social media use has soared in recent years with over half of the world population active on at least one social media service for over 2 hours a day[1]. Although Facebook (Meta Platforms) and YouTube (Google) remain the most used by the general public, Twitter stands out as a popular platform for physicians and scientists[2, 3]. In fact, 10–20% of life science researchers report using Twitter, and there is even greater participation by researchers in the humanities and social sciences[4, 5]. Twitter's widespread use among scientists, particularly early-career scientists, appears to be driven by the platform's ability to rapidly reach a large audience and disseminate information to other researchers. It can be an effective means of increasing name-recognition within research fields beyond more traditional approaches like conferences and symposia. An increasingly common experience at many scientific annual meetings, including the Orthopedic Research Society (ORS), is meeting a new colleague in person for the first time and exclaiming "It's so nice to finally meet you in real-life; I follow you on Twitter."

The authors of this editorial are all active on social media, and we have witnessed the benefits of widespread Twitter use within the orthopedic and musculoskeletal research communities in recent years. Twitter has served as a forum for announcing funding and promotion updates, seeking career advice, and discussing difficult professional situations. From a more scientific focus, Twitter has been used for surveying topics of interest at upcoming scientific meetings, building and maintaining professional networks, finding collaborators, and promoting the latest research publications from individual labs. Indeed, promotion of a publication on Twitter has become increasingly important for driving article discussion and visibility, both in preprint or peer-reviewed format. The real-time engagement among the broader research community, especially in the era of preprints, offers a new dimension of impact for researchers and journals beyond traditional bibliometrics that can take years to generate including author citation numbers, author h-index, and journal impact factor[6]. Despite Twitter's increasing usage in our field, there are orthopaedic researchers who do not engage on the platform, many of whom express trepidation at the learning curve associated with getting started or do not feel alignment with the values of the platform. Surprisingly, the majority of musculoskeletal scientists publishing orthopedic research, particularly in the Journal of Orthopedic Research (JOR)/JOR Spine, official journals of ORS, have neither an active twitter presence nor elect to include a graphical abstract with submission.

Therefore, the purpose of this paper is to provide a guide to using Twitter for enhancing social media presence among orthopedic researchers by highlighting the main themes and insights from the Journal of Orthopedic Research (JOR)/JOR Spine Workshop during the ORS 2022 Annual Meeting in Tampa Bay, Florida. This workshop, organized by JOR Editor-in-Chief Dr. Linda Sandell, focused on communication strategies (particularly social

media) to broadcast published work in orthopedic research. In this document, we will summarize data presented at the meeting that support the beneficial impacts of amplifying scholarly works on Twitter and outline a linearized workflow for constructing Twitter posts. Although these principles covered for Twitter are relatable to other social media platforms such as Facebook, LinkedIn, Mastodon, etc. their usage and target audiences may vary. Therefore, a detailed framework must be developed for other types of social media platforms, which will be briefly covered near the end of the article. Moreover, we will identify resources to alleviate barriers to Twitter usage and help promote professionalism and success online in the orthopedic research community, with application to other social media platforms as well. As early career scientists in orthopedics, we see immense value in using social media to communicate our research findings and build our scholarly networks. We hope this information will be persuasive to those in the orthopedic field and be broadly applicable to others in related scientific fields who wish to disseminate findings and engage a public audience on social media. For the ORS and JOR/JOR Spine communities, Twitter can assist in accomplishing our mission of creating a world without musculoskeletal limitations via broad and open engagement with orthopedic research findings and news.

The Benefits of Utilizing Twitter for Dissemination of Scholarly Content

Individual bibliometrics (author citation numbers and h-index) have been used as key metrics of research quantity and quality, and high bibliometrics often translate into enhanced individual prestige and career advancement. However, discussions around using alternative metrics (aka “altmetrics”, or the Altmetrics Attention Score), founded in 2011, as an additional marker of research impact, continues to be widely debated and researched. The Altmetric Attention Score is an automatically updated and weighted number used to track online media attention of scholarly works in social media posts, news articles, policy documents, etc.[7] Due to rising popularity, the Altmetric Attention Score is routinely published alongside journal articles on the publisher’s website. These factors, and the increasing use of social media over time, have led to new research investigating Altmetrics as an alternative reliable indicator of traditional bibliometrics.

Emerging evidence suggests that social media (quantified by Altmetrics) can have a significant and lasting impact on a researcher’s recognition and the impact of their scholarly works. For example, top journals in the research fields of sports science[8], pathology[9], and radiology[10] all demonstrated significant positive correlations between citations and Altmetric Attention Scores ($R = 0.20 – 0.77$), although the strengths of association varied. In addition, all three studies reported Twitter as the predominant online source contributing to each article’s overall Altmetric Attention Scores. Recently published results by Halvorson et al. demonstrated similar trends between Twitter usage and citations within 17 orthopedic journals from 2018. For example, the authors found that twitter mentions, journal impact factor, and non-open access status of the journal were all significantly associated with greater citation count.[11] In contrast, analysis of correlations and Altmetric Attention Scores from journals in other fields, such as rheumatology[12] and biology[13], showed non-significant and weak correlations ($R = 0.004 – 0.120$). Although these data suggest that post-publication social media promotion of scholarly articles, especially via Twitter, can influence traditional metrics of success and impact, correlations vary widely based on scientific field, type

of journal (i.e., impact factor), type of article (technical or methodological vs. original research), and the timeframe post-publication. More specifically, on average articles received higher citations and Altmetric Attention Scores if they were technique-based (versus original research)[14], published in a journal with its own social media account[15, 16], and included comments and graphical abstracts[17].

Based on these findings in other fields, the ORS Social Media Committee (ORS SMC) currently is investigating the strength of correlation between article citations and social media use within JOR and JOR Spine published articles and the greater ORS community. Wiley and Sons, Inc. staff members and the ORS SMC have helped create and streamline @JOrthopRes and @JORSpine Twitter handles run by editorial staff, who routinely post newly-accepted journal articles on Twitter (#ManuscriptMonday) and help submitting authors join social media and create graphical abstracts to personally promote their work online. Due to the growing role social media appears to play in disseminating and highlighting scholarly work, in the next section we detail steps to construct and analyze content on Twitter and later on other emerging social media platforms for maximum engagement.

Linearized Workflow for Twitter Post Construction

Setting up a professional social media account, particularly on Twitter, may sound daunting — but is relatively straightforward and the first step to successfully publicizing your scholarly works. Although a full tutorial is beyond the scope of this paper, we suggest using the following resources to get familiar with the Twitter platform and lingo (such as “hashtag”; “handle”, and “trending”) and some basic rules for getting started[18, 19]. In addition, the ORS SMC has put together a brief tutorial describing how to set up an account and use Twitter and LinkedIn as a scientist in the online resource column of Table 1. First things first, start by creating a self-explanatory Twitter handle (such as the name of your lab or research group); include your full name and credentials on the account profile (for easy searching), use a professional close-up or headshot for a profile picture, and fill out your bio with concise and relevant research area keywords and hashtags. Once your account is created, begin your interactive social media journey by following one or two specific role-models you know personally as well as any scientific societies or organizations to which you belong or with which you want to become involved. This will provide initial visibility with accounts that are directly relevant to your interests and goals on Twitter. If you are interested in broadening your online presence, these steps are also relevant for accounts on other social media sites such as Facebook and LinkedIn. Now that your Twitter profile is ready, it’s time to send out your first social media post or tweet and join the active and engaging conversation online. Next, we identify a procedure for crafting a scientific tweet and analyzing its impact for maximum effectiveness and reach (Fig 1).

To Prepare:

- Define Your Audience & Message - Who do you want to reach? Is this a lay audience, or a field-specific audience? What type of language is appropriate?
- Goal setting - Define level and type of engagement desired.

- Determine how to define success of post or tweet *a priori*
- Strategies may vary with message and should be tailored to the specific announcement (preprint vs job announcement vs published paper vs. technical question)

Workflow (See Fig 1):

1. **Think it through**- There are many successful strategies to effectively communicate your main message in 280 characters or more. Including a visual abstract or key figure that best represents the scope of the paper has been shown to lead to increased post engagement for orthopaedic research articles[20]. In a study of 57 pairs of identical-text, randomized-order tweets about Journal of Orthopaedic Research articles posted by the @JOrthopRes Twitter account, there were significantly increased impressions (+71% higher) and engagement (+13% higher) when tweets included figures from the articles they were promoting (unpublished data). If using a key figure, it may be best to use only an informative portion of the original figure, to respect copyright privileges of the journal. However, these copyright concerns are likely to dissipate in the coming years due to increasing use of preprints and new federal guidelines around open access and research transparency. If creating your own graphical abstract, professional tools like Biorender(R), Adobe Suite, or Inkscape are useful to generate these images for both journal publications and social media posts. Explicitly promotional graphics are great for communicating with a broad audience, and also allow for optimized size/aspect ratio of the graphic which may be different than what is typeset in a journal. We have included a visual abstract representing the scope and take-home messages of this editorial as an example (Fig 2). In addition, many publications now offer fee-based generation of visual abstracts for accepted authors with professional assistance. Generally, social media should target lay audience – but depending on how you craft your message, you may be targeting a key subgroup of #SciTwitter or #OrthoTwitter, so choose your language appropriately. Be sure to include a link to the paper, either in full format or using a tool to shorten it (tinyurl, bitly, etc) to help with tracking and metrics. URL shortening tools may be available through your institution. It is important to consider accessibility with color-blind friendly colors, legible sized fonts, and alternative text for screen reader access up front, and not as an afterthought. Also, strategizing ahead of time and soliciting feedback from co-authors is useful in this context.
2. **Timing** - Be aware of when your publication will “go live,” or when a press release may be made by your institution or local news source. Timing of social media posts is not a one-time-fits all perspective and should focus on when your intended audience is most likely to be online. For example, will your target audience only check tweets during the workday, weekends, or more in the morning or at night. There is limited data on the optimal time to tweet scientific literature within the orthopaedic community. However, research data from social media software application Buffer, suggests that the optimal time

to tweet widely varies widely by geographical timezone.[21] For example, in the U.S., 12–1 p.m. (lunchtime) appears to garner the most engagement whereas in Europe and Asia, tweets in the morning to evening hours (local time) tend to perform better. Therefore, tweets wanting to reach the broadest audience should be sent out multiple times per day (local time) to maximize on multiple-time zones across the Americas, Europe, Africa, and Asia/Australia.

3. **Tweetorial (or not?)** - A tweetorial is a string of one or more tweets in series that allow one to expand the space you may need to tell your story. As simple as two tweets, these are composed as one united thread that all gets tweeted together to avoid disjointedness. Some authors choose to walk through every figure in the paper to tell their story whereas some choose to use the subsequent tweets to acknowledge co-authors, home institutions, funders, etc. There are many effective strategies that can be used depending on your message and target audience. Use the create thread function to ensure these tweetorials get posted together and in the intended order.

4. **Tags** - Hashtags and @-based tags help improve the visibility of your work to the broader community. In the previously mentioned paired-tweet article-highlight posting study using the @JOrthopRes account, including at least one hashtag of an author, lab, institution, or ORS section was associated with significantly higher tweet impressions (+219%), engagement (+143%), engagement rate (+36%), and url link clicks (+175%) compared to no tags (unpublished data). Hashtags will make your post searchable under that tag, for example, #OrthoTwitter or #ORSSMC. @-based tags will allow for the people you tag to follow along with the post by receiving notifications based on the post's activity and work on Twitter, LinkedIn and Instagram. Alternatively, you can tag individual accounts in your images to leverage the space in the tweet for other text. It might be useful to generate a strategy of groups to tag in the image for consistency and to improve inclusion. As stated in the next section, receiving consent from individuals and entities to be tagged is suggested.

5. **Takeaways** - Getting to the point quickly is key. Craft a snappy 1–2-line question, statement, or finding to make the big message clear. Making the "so what" as clear and engaging as possible will increase the engagement with the post. However, be mindful of your audience and avoid jargon if possible. In our experience, the more concise, succinct, and catchy a tweet is, the better its overall engagement will be.

6. **Thank you's** - Science is a team sport, and after the completion of studies many individuals and entities are deserving of acknowledgement and gratitude. This includes co-authors, collaborators, funding agencies, end-users (foundations, societies, patient groups, clinical collaborators), affiliated departments, groups that might have provided seed funding, professional organizations, etc. These individuals and organizations should be acknowledged during the initial post or during followup replies.

7. **Tracking and Metrics** - The easiest way of gauging effectiveness is to use tracking tools built into Twitter and the Altmetric Attention Scores in the journals. The social media engagement information is available below the tweet itself and will help the user identify how many people saw, engaged with any links, liked or retweeted (shared) the post. The quantity and type of engagements are meaningful data points to gauge the success and reach of your tweet. You can also choose to "pin" your tweet to the top of your personal account to remain accessible and continue to have engagement when other users visit your page.

In our experiences and those reported by others[22], actively composing tweets and engaging with content from others on Twitter will typically help your online presence grow. This content generated online will contribute to the community's perception of the personal brand of the group or individual represented by the publishing account. As in traditional forms of communication (in-person), posting with a consistent voice and in a timely manner is key (<24 hours). Outside of announcing publications, users can share their experiences in the lab, grant review comments, and opinions on academic trends. For example, many users share their experiences and advice during interview seasons for graduate admissions and faculty hiring. Research group accounts also will feature social activities, in addition to updates about research presentations and progress. Asking technical or professional questions on social media is a norm in the scientific communities, and often yields effective advice and feedback for users. All interactions on Twitter, including responding to or engaging with other posts and content creation, will contribute to your online personal brand, which should be a genuine reflection of your offline persona. A great way to get started and quickly grow your online presence on Twitter and beyond is to actively follow and engage with content already curated by the ORS SMC, ORS official accounts, and by the JOR/JOR Spine accounts (Tab. 1 and Tab. 2).

Other Social Media Platforms for Orthopaedic Researchers

Though Twitter is the most utilized social media platform for academics currently, other emerging platforms like Mastodon and Post are steadily building traction within the scientific community, due to societal and institutional shifts in policies regarding curation and consumption of social media on Twitter. Mastodon is an open source, decentralized social network similar in build to that of Slack or Discord where users must join independent servers, called "instances", organized around topics of interest or geographical locations.[23] The parsing of user interactions based on interest offers a more tailored experience for those aiming to only engage with other academics in their field, but engagement with the complex interface of the platform can be overwhelming for new users. Post is a slightly different sort of platform that aims to capture the essence of the diverse interactions offered by Twitter, but prioritizes minimizing the more negative components of Twitter by offering, "Real People, Real News, Civil Conversations"[24]. The user interface is simple and user friendly, but the platform in only in its Beta stage at the time and thus still in its infancy. Like Twitter, both Mastodon and Post users can comment, like, share and repost content on their account and by using the aforementioned workflow (Fig 1) for maximum effectiveness at sharing their scientific content. Unlike Twitter however, posts lengths on Mastodon (known as a toot) and Post can be much longer (up to 11,000 characters). A caveat to sharing scientific content

on these platforms instead of Twitter is that posts may have reduced engagement from the scientific community since many academics are established on Twitter, and have not yet transitioned to or duplicated accounts on Mastodon, Post, or other emerging platforms.

The Orthopedic Research Society community is also active on a wide variety of social media platforms outside Twitter (Tab. 1). Although already highlighted, the ORS Twitter account (@ORSsociety) at this time, has one of the top followers counts of any ORS social media account (~7300 followers). Twitter is a great source of all ORS-related information, such as award deadlines, member spotlights, annual meeting updates with 1–3 posts per day on average (Tab. 2). The research sections within the ORS provide more targeted updates and features for their members via Twitter (Tab. 2). Research articles submitted to the Journal of Orthopedic Research (@JOrthopRes) and JOR Spine (@JORSpine), publications of the ORS, are frequently featured on the journal-specific accounts. In addition to features by the journal-specific Twitter accounts, ORS publications in JOR and JOR Spine are also advertised by ORS SMC no later than 1–2 weeks following publication. Committee members post these articles and other content of interest for ORS members. ORS SMC content and member accounts are searchable with #ORSSMC. ORS members can also use a variety of other social media platforms, such as Facebook, LinkedIn, TikTok, YouTube, and Instagram to connect with fellow orthopedic researchers via the ORS official accounts (Tab. 1). To capitalize on industry connections, the ORS LinkedIn page posts frequent updates and stimulates discussion in the community groups. Video-based media is frequently posted to the ORS TikTok and YouTube accounts, featuring member spotlights, instructional webinars, and more. The ORS Facebook page, which also has a high follower (Tab. 1) and regular postings is particularly well suited to orthopedic advocacy and education efforts due to its broader user base consisting of more non-scientists. To assist members new to social media, the ORS SMC created instructional videos for Twitter and LinkedIn account creation and participation, both of which are featured on the YouTube channel. For more advanced materials on the use of social media in the publication process, the ORS offers a LearnORS course entitled “The ORS Forum for Enhanced Writing and Publication Skills”. A full list of all ORS social media channels and their respective strength and weaknesses are listed in Table 1.

Potential Barriers for Social Media Usage

Although the orthopedic research community has a strong and growing presence on social media, some members may be hesitant to use social media in a professional context due to lack of familiarity with the social media platforms, its extra time commitment and ethical concerns. Concerns related to social media use include privacy, etiquette/professionalism, overload or burnout, perceptions about popularity (quantity of attention online) versus substance of content (quality), contributing to widening disparities, online harassment/cyberbullying and inclusion/accessibility of social media content. We acknowledge that existing norms can be used as guidelines to participate in social media in a way that mitigates but may not fully eliminate these concerns.

Privacy Concerns—When creating a Twitter account for a research group or other non-individual entity, privacy should be the highest priority. For a variety of reasons, including

safety and privacy concerns, individuals may wish to avoid having their photo posted on social media; therefore, consent prior to posting is necessary for posting pictures of people or their research, especially if unpublished. The addition of editing posts via Twitter Blue (paid subscription) and LinkedIn may be a more appropriate for handles associated with multiple individual entities such as labs, organizations and clubs since minor errors and typos can be easily remedied. Online avatars can be used for those who wish to engage via media attachments but chose not to share their own face. Further, when posting about people other than yourself, tweets should not include personal details, such as medical conditions, family status, or sexual orientation. This concern can be bypassed if the person posting the tweet has obtained specific permission, which should be clearly stated in the post (example: “shared with permission”).

Etiquette and Professionalism—The scientific community active on social media already has established a foundation of acceptable and unacceptable behaviors related to etiquette and professionalism[25, 26]. Here, we will summarize some of the best practices to keep in mind while engaging on Twitter. Professional social media behavior should mirror expectations for day-to-day professional interactions in the non-social-media setting (i.e. in person; face-to-face); users should remember that social media accounts are associated with individuals, whose feelings and expectations for behavior are similar to ‘real life’ expectations. While accepted etiquette and professionalism standards will vary by individual or research group just as in ‘real life’, some research-specific norms require additional attention. For example, always consider the risks of plagiarism or ‘scooping’ when sharing unpublished results on social media, particularly when sharing work by others being presented at conferences. Conference rules regarding photography and social media should be followed. If photography is allowed but the presenter has not given permission to share presentation content, the best approach is to share abstract-level information about what is being presented and to limit image sharing to the title or acknowledgment slides, or poster titles. Other research-specific considerations include taking special care to redact or omit sensitive information related to supervisees, study participants, intellectual property, research animals, tissue donors, etc. to ensure a respectful and safe, privacy-protecting social media presence.

Time Commitment/Burnout—Social media participation can seem like one more thing to add to an already busy schedule. To avoid being overwhelmed and not spend too much time online, one can use tools such as the ability to create lists. For example, Twitter allows the creation of ‘Lists’ that curate content and user profiles more strictly than on the general timeline. Scheduling dedicated social media times for focused browsing and post creation can similarly reduce feelings of being overwhelmed. In addition, using free online tools for content creation for simultaneous posting to multiple social media sites, such as Hootsuite and Tweetdeck, allow for one to save time crafting multiple similar posts.

Insufficient Reach—Social media participation may seem futile if a user’s reach (i.e. number of people who see your content) and follower count seem small or remain stagnant. Grace and patience are important, as success and positive feedback may not occur immediately. For science-focused accounts on Twitter, a threshold of approximately

1000 followers are needed before the range of follower types expands to include a broader audience beyond other researchers, such as media, members of the general public, decision-makers, and research/educational organizations[27]. Users aiming for larger scale, effective 'outreach' can better achieve their goals with follower counts over 1000. To reach this follower count will take some time (potentially years or more). For reference, since 2019, the official ORS social media page on Twitter and Facebook have grown by an average of 1100 and 620 followers annually. Therefore, just as with real-life networking, follower count will build and grow naturally over time via interactions with more people and quality content curation.

Is This Just A 'Popularity Contest'?—Social media can feel like a popularity contest and does have the potential to exacerbate existing opportunity gaps and imbalances in science. Researchers on social media should push back against the impression of a 'popularity contest' by building a genuine online network/community and amplifying the work of others in addition to just sharing one's own or a team member's work habitually. For example, repost content from others using tools, such as Retweet on Twitter, that allow amplification with credit to the original post. Users also can promote others by posting about interesting papers and presentations or influential ideas, and recognizing the relevant researchers with tags if they are also on the social media platform.

Social Media and Widening Disparities—Disparities on social media are real and often reflect those seen in other facets of life but also represent an opportunity for mitigation and change. For the social media platform of Twitter, female researchers in some fields are less likely to participate compared to male scientists[28]. Evidence of disparities in follower numbers and amplification also reflect existing gender and racial biases in several fields[29–31]. In addition, people of color and sexual/gender minorities are disproportionately victims of online harassment or bullying[32–34], which has been shown to lead to increased self-blame, mental-health disorders, and social media avoidance or privacy issues among these marginalized groups of people. Therefore, the benefits of engaging as a scientist on Twitter, and social media in general, may not outweigh the risks for some. However, social media has improved visibility of younger scientists[28], and some policy disparities were reduced in multiple studies[29, 35].

While these disparities are hard to overcome on an individual user basis, groups of users can combat known disparities when choosing who to follow and who to amplify, participating in bystander interventions and fact-checking and by encouraging professional role-models in our community to join various platforms [36]. Regular review of your twitter analytics can help determine if you're accurately promoting the work of the entire orthopedic research community and doing your best to be more inclusive and equitable. Social media is an opportunity to seek out and help boost the visibility of researchers who may be less visible or well-known via conventional research-sharing mechanisms. These individuals include trainees, people at less well-recognized institutions, people from underrepresented/marginalized or excluded groups, those who may be unable to frequently attend conferences for various reasons (international/visa restrictions, funding, health, family responsibilities, etc.), or researchers who may have followed less traditional career paths.

Inclusion and Accessibility—Social media has particularly high potential for inclusion and accessibility, when used with those goals in mind. Good practices for maximizing inclusion and accessibility include combining complementary types of media (text, image, video, audio) when possible, taking advantage of accessibility features that exist on the various platforms, and using language that is inclusive and appropriate for your target audience (avoiding overly technical terms or jargon)[37, 38]. Accessibility features include alt text or captions for image descriptions and video captions. Users who may have difficulty reading social media text or rely on screen reader technology also benefit from practices such as avoiding using all caps, using camel-case for hashtags, minimizing the number of emojis used, etc.

Increasing social media accessibility is one of the many ways our community can champion diversity, equity, and inclusion (DEI) practices. **Orthopedics is the least diverse clinical and biomedical research specialty**[39, 40]. **Therefore, intentional actions that aim to improve diversity, retention and inclusion in orthopedic research have high potential impact and *are long overdue*.** The ORS SMC has made strides to improve diversity, equity, and inclusion in the orthopaedic communities on social media. Individual posting by SMC members is routinely evaluated to ensure equitable promotion of ORS members from various backgrounds, research environments, and career stages. SMC members track their tweets to ensure that their promotion of JOR authors and ORS members represents a diverse population and does not exclude members from underrepresented backgrounds. To further promote ORS members, the SMC established the ORS Diversity Spotlight Series and regularly publishes video- or text-based interviews featuring a wide range of ORS members from various backgrounds and career stages. Nominations for Spotlight interviewees are collected from both the ORS DEIC as well as past nominees, in an effort to remove biases of the ORS SMC members and expand into new interpersonal networks. All video material collected or promoted by the SMC contains closed captioning to ensure inclusivity. Finally, to ensure that diversity of scientific background, career stage, and occupation are represented on the committee, the ORS SMC has issued special Calls for Volunteers. Further, the SMC has been very active in promoting DEI initiatives spearheaded by other ORS committees and subgroups, including but not limited to: ORS Spine Section diversity travel awards, the ORS URM Undergraduate travel awards, the Asian Leadership Forum, Pride @ ORS, Emerging Orthopedic Surgeons, and the Junior Faculty Network. The use of social media to promote these efforts has been instrumental in spreading awareness of these programs and opportunities to the field, but there is always room for improvement. Social media is a powerful tool commonly used by academics at every career stage; therefore, the creation and promotion of DEI focused programs within the ORS has the capability to make the Orthopedic field more welcoming and supportive of underserved populations.

Conclusion and Future Directions

All media, including social media, has the potential to broadly reach and inform the public about research and to decrease disparities. For the ORS and JOR, social media can assist in accomplishing our mission of creating a world without musculoskeletal limitations. Currently public outreach for musculoskeletal diseases using social media is limited and will require not only a critical mass of online musculoskeletal researchers but

one that has a strong unified voice. This community effort will be critical to informing all audiences, including elected officials and members of the public, on the burden of orthopedic diseases and importance of research funding. We, therefore, encourage all researchers in our community to develop a strong social media presence for their research. To help our community initiate these efforts and maximize impact, we have recommended musculoskeletal social media platforms and channels to engage with, along with their strengths and weaknesses. Ultimately, social media is a tool to enhance the timely and truthful dissemination of orthopedic research findings and news.

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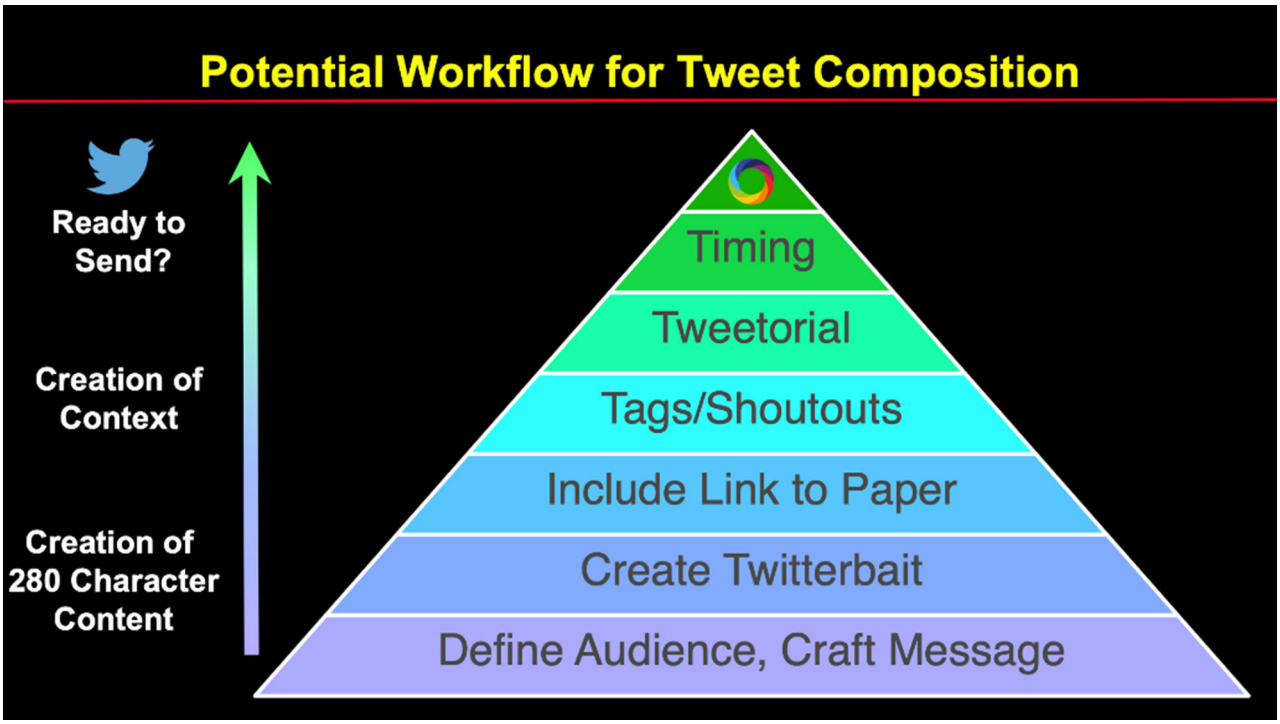

Figure 1.
Seven simple steps for tweet composition.

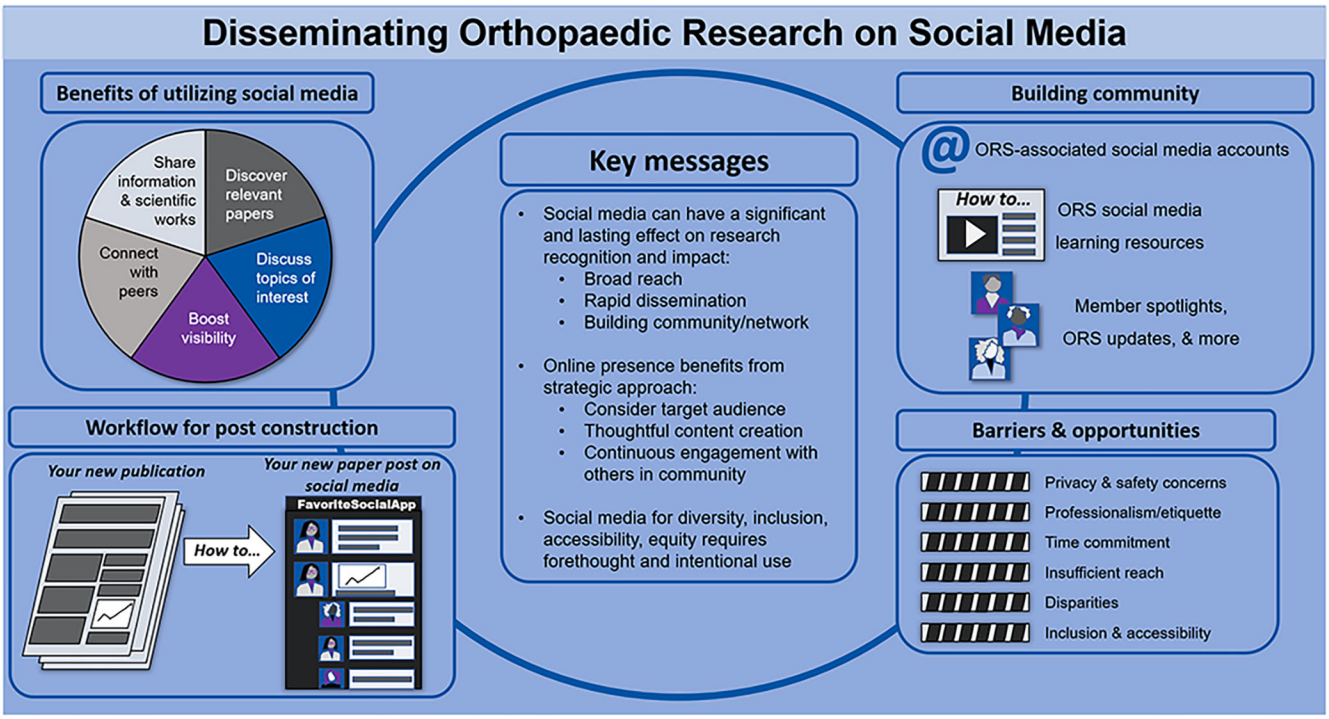

Figure 2.

Example of a visual abstract for this review article on disseminating orthopedic research on social media.

Table 1.

ORS-Associated Social Media Accounts and Resources

Platform	Account Name	Social Media Resources	Platform Strengths	Platform Weaknesses
Twitter	@ORSSociety	https://youtu.be/HfYu8bJF3-g	Large opportunity for networking & finding new resources	Large communities can be overwhelming to new members
Facebook	Orthopaedic Research Society		Increased opportunity to share with non-science community	Networking limited to approved “friends”
Instagram	@orssociety		Increased opportunity to share with non-science community	Networking limited to approved “followers”
LinkedIn	Orthopaedic Research Society	https://www.youtube.com/watch?v=eTgP5YqaVis	Large industry-focused network & profile serves as living resume	Less frequent interactions with network
YouTube	Orthopaedic Research Society		Long-format videos are easy to access	Limited interaction between ORS members
TikTok	@orssociety		Short-format videos are easy to access & can achieve educational outreach efforts	Limited interaction between ORS members

Table 2.

ORS-Associated Twitter Accounts

Group	Twitter Account
ORS Society	@ORSSociety
Journal of Orthopaedic Research	@JOrthopRes
JOR Spine	@JORSpine
Tendon Section	@ors_tendon
Preclinical Models Section	@ORSPCMSection
Meniscus Section	@ORSMeniscus
Spine Section	@OrsSpineSection
International Society of Fracture Repair	@isfrfractures