



## Publication rates of podium presentations at the American Shoulder and Elbow Surgeons annual open versus closed meetings 2008 to 2012



Michael J. Collins, MD, Thomas A. Arns, BS, Rachel M. Frank, MD, Greg L. Cvetanovich, MD, Austin Black, Anthony A. Romeo, MD, Gregory P. Nicholson, MD, Brian Forsythe, MD \*

Midwest Orthopaedics at Rush, Chicago, IL, USA

### ARTICLE INFO

#### Keywords:

Publication rates  
Abstract  
Podium  
Poster  
ASES  
American Shoulder and Elbow Surgeons  
Annual meeting

Level of evidence: Survey Study, Other

**Aim:** The purpose of this study was to analyze the publication rate for abstracts presented at podium presentations from the American Shoulder and Elbow Surgeons (ASES) annual open and closed meetings from 2008 to 2012.

**Materials and methods:** Abstracts accepted as podium presentations for the open and closed meetings from 2008 through 2012 were followed. A search was performed using Google Scholar and PubMed for all published manuscripts. This analysis looks at abstracts categorized based on annual meeting (open versus closed) and by meeting year (2008–2012). Data including publication journal, publication date, and level of evidence were recorded. Descriptive statistics, t-tests, and odds ratios were performed with  $p < 0.05$  significance.

**Results:** A total of 365 abstracts were accepted to the open and closed annual meetings from 2008 to 2012, with 49% and 51% presented in open and closed forums. A total of 222 (61%) were published within 3-years in peer-reviewed journals. No difference existed in 3-year publication rate between open and closed podium presentation meetings (112/178, 63% open; 110/187, 59% closed;  $p = 0.4229$ ); however, presentations at closed meetings were more likely to be published after 3-years compared to open meetings (2/178, 2% open; 15/187, 12% closed;  $p = 0.002$ ). Most common journal of publication was the Journal of Shoulder and Elbow Surgery (JSES) (50%).

**Conclusions:** Podium abstracts presented at the open and closed annual meetings have publication rates of 63% and 59% with overall combined publication rates of 61% from 2008 to 2012. The high publication rate and high impact of publications speak to the exemplary educational value of ASES annual meetings.

© 2017 The Authors. Published by Elsevier Inc. on behalf of American Shoulder and Elbow Surgeons. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

The presentation of novel findings and outcomes related to evidence-based clinical practice has been extremely valuable and important in shaping the clinical decision making of physicians worldwide. At national scientific meetings, abstracts serve as a primary medium through which information is transmitted and passed on to

others. Most national scientific meetings have an arduous abstract review process that closely evaluates all submitted abstracts, in which only a handful are selected to be presented either via podium or poster. The abstracts of the strongest, most clinically significant manuscripts are selected for presentation; however, abstracts are often limited by word or character restrictions, limiting the ability of the reviewer to aptly determine the quality of the study.<sup>6</sup>

There are a host of national scientific meetings held each year in which researchers can choose to submit their abstracts to be selected for meeting presentation. Publication rates at these meetings range from 36% to 67%, with previous studies showing that a majority of abstracts are published within 3-years of meeting presentation.<sup>1–4,8–11,14,15</sup> The relationship between abstracts presented and the subsequent manuscript publication of presented abstracts in peer-reviewed scientific journals likely influences a meeting's status, popularity, and general attendance. The manuscript

This study was IRB exempt (no human subjects), and performed at Midwest Orthopaedics at Rush University Medical Center.

The authors, their immediate family, and any research foundation with which they are affiliated have not received any financial payments or other benefits from any commercial entity related to the subject of this article.

\* Corresponding author. Brian Forsythe, MD, Midwest Orthopaedics at Rush University Medical Center, 1611 West Harrison Street, Suite 300, Chicago, IL 60612, USA.

E-mail addresses: [Forsythe.research@rushortho.com](mailto:Forsythe.research@rushortho.com), [Brian.Forsythe@Rushortho.com](mailto:Brian.Forsythe@Rushortho.com) (B. Forsythe).

<http://dx.doi.org/10.1016/j.jses.2017.02.002>

2468–6026/© 2017 The Authors. Published by Elsevier Inc. on behalf of American Shoulder and Elbow Surgeons. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

publication process of accepted abstracts has many important factors; however, abstracts selected for meeting presentation and manuscript publication, by a peer-reviewed committee, likely represent the most impactful papers.

The publication rates of abstracts presented at various orthopedic meetings have been established, yet, to our knowledge, there have been no data published on publication rates following the American Shoulder and Elbow Surgeons (ASES) open and closed annual meetings.<sup>2-5</sup> Thus, the purpose of this study was to analyze the publication rates of presentations at the ASES annual meetings as well as factors influencing publication. We hypothesize that the ASES closed meetings will have an increased publication rate relative to the open meeting with the overall publication rate for ASES presentations comparable to other prominent national scientific meetings.

## Materials and methods

To obtain a comprehensive list of all abstracts presented and subsequently published after the annual ASES open and closed podium presentation meetings from 2008 through 2012, a thorough online search was performed using Google Scholar and PubMed. An electronic version of the program's booklet for the ASES open and closed annual meetings from 2008 through 2012 was provided by ASES. The study period selected spans 5-years up until 2012 as to allow for publication rates over a 3-year time interval to be sufficiently tracked.

In this study, abstracts presented as podium presentations were followed. Abstracts were categorized based on annual meeting type (ASES open versus ASES closed) and by meeting year (2008, 2009, 2010, 2011, and 2012). To conduct the search systematically, a methodical search strategy was used that included key words from the abstract titles, author's names, MeSH terms, and/or key words from the abstract body. This search approach is in accordance to methods from similar studies retroactively evaluating publication rates from national scientific meetings.<sup>3,5,7</sup> If there was not a match between a presented abstract and published manuscript in the initial query, our search methodology was broadened to include a cross-reference of each author's last name. This search algorithm was repeated multiple times by multiple authors shielding our results from the effect of not including abstracts in our publication rate that were indeed published. When a confirmed pairing between presented abstract and published manuscript was identified a record of the published manuscript's title, publication date, level of evidence, and publishing journal was documented.

After evaluating all 365 abstracts presented at the ASES open and closed annual meetings from 2008 to 2012, publication results were analyzed using IBM SPSS Statistics Version 22 (SPSS Inc, Chicago, IL, USA). Group data were analyzed using SPSS's analyze descriptive statistics function for mean and standard deviation calculations. Comparison data between groups (open versus closed) was calculated using Student's t-test (unpaired). SPSS regression modeling was employed as to determine the relationship between dependent variable (open podium versus closed podium) on independent variables (publication status, publishing journal, and time to publication). An odds ratio with a 95% confidence interval was also used to determine the likelihood of presentation type reaching manuscript publication. All statistical testing was evaluated with a threshold of  $p < 0.05$  for statistical significance.

## Results

A total of 365 abstracts were accepted to the ASES open and closed annual meetings from 2008 to 2012, with 178 abstracts presented at the open meetings (48.8%) and 187 abstracts presented

**Table I**

ASES meetings open podium presentation rate of publication within 3-years, 2008–2012

	2008	2009	2010	2011	2012	Total
Selected for open podium presentation, n	36	44	26	40	32	178
Published within 3 years, n	26	26	14	27	19	112
Publication rate, %	72.2	59.1	53.8	67.5	59.4	62.9

**Table II**

ASES meetings closed podium presentation rate of publication within 3-years, 2008–2012

	2008	2009	2010	2011	2012	Total
Selected for closed podium presentation, n	35	35	38	40	39	187
Published within 3 years, n	22	18	20	21	29	110
Publication rate, %	62.9	51.4	52.6	52.5	74.4	58.8

**Table III**

ASES meetings open and closed podium presentations' publication rate comparison, 2008–2012

Type of presentation	Published, n (%)	Unpublished, n	Total, n	Odds ratio (95% CI)	p Value
Open podium	112 (62.9)	66	178		
Closed podium	110 (58.8)	77	187	1.1879 (0.7796, 1.8099)	0.4229

at the closed meetings (51.2%). Of 365 accepted abstracts, 222 (60.8%) were published within 3-years in peer-reviewed journals, with an additional 17 (4.66%) published after 3-years.

There was no difference in 3-year publication rate between open and closed podium presentation meetings (open: 112/178, 62.9% [Table I](#); closed: 110/187, 58.8% [Table II](#);  $p = 0.4229$ ). Presentations at closed meetings were more likely to be published after 3-years compared to open meetings (2/178, 1.8% open; 15/187, 12.0% closed;  $p = 0.002$ ). The overall publication rates for open podium versus closed podium presentations were 62.9% ( $n = 112$ ) and 58.8% ( $n = 110$ ) within 3-years of being presented ([Table III](#) and [Fig. 1](#)).

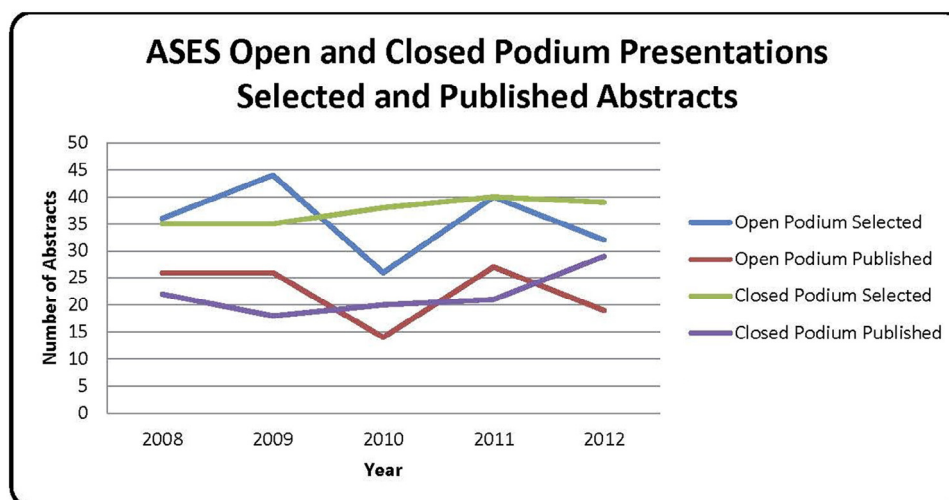
The most common journals for publication included: Journal of Shoulder and Elbow Surgery (JSES) ( $n = 111$ , 50%), Journal of Bone and Joint Surgery (JBJS) ( $n = 42$ , 18.9%), American Journal of Sports Medicine (AJSM) ( $n = 29$ , 13.1%), Clinical Orthopaedics and Related Research (CORR) ( $n = 8$ , 3.6%), and Arthroscopy ( $n = 8$ , 3.6%) ([Table IV](#)).

**Table IV**

ASES meetings journal of publication for abstracts, 2008–2012

Journal	n	%
<i>Journal of Shoulder and Elbow Surgery</i>	111	50.0
<i>Journal of Bone and Joint Surgery</i>	42	18.9
<i>American Journal of Sports Medicine</i>	29	13.1
<i>Clinical Orthopaedics and Related Research</i>	8	3.6
<i>Arthroscopy</i>	8	3.6
All other journals*	24	10.8
Total	222	100

\* All other journals include: *Journal of Orthopaedic Trauma*, *Journal of Pediatric Orthopaedics*, *The Journal of Hand Surgery*, *Journal of Surgical Orthopaedic Advances*, *International Orthopaedics*, *American Journal of Orthopedics*, *Journal of Extracorporeal Technology*, *Journal of Orthopaedic Research*, and *Operative Techniques in Orthopaedics*.



**Figure 1.** American Shoulder and Elbow Surgeons open and closed podium presentation abstracts selected and abstracts published by year between 2008 and 2012.

## Discussion

The main findings of this analysis show 1) in the 5-year time frame from 2008 through 2012, the publication rates of ASES open versus ASES closed annual meeting podium presentations are 63% and 59% with an overall meeting publication rate of 61% which is comparable to other orthopedic national scientific meetings, 2) abstracts selected for ASES closed presentations were just as likely to be published compared to abstracts presented in the open seminar within 3-years of their initial presentation and 3) abstracts presented at ASES closed presentations were significantly more likely to be published after 3-years compared to ASES open presentations ( $p = 0.002$ ).

Interestingly, compared to recent studies evaluating 3-year publication rates of podium presentations at national scientific meetings, both ASES open and closed podium presentations had similar 3-year rates of publication. The publication rate of abstracts presented at the ASES open and ASES closed meetings is similar to percentages previously calculated from other meetings.<sup>1–4,8</sup> Data from a previous study found an overall podium publication rate of 73% for abstracts presented at the American Orthopaedic Society for Sports Medicine (AOSSM) meetings from 2006 to 2010.<sup>11</sup> The rate of abstract podium presentation publication for AOSSM meetings, in this period, is much higher compared to most studies evaluating rates of abstract publication presented at the podium from several orthopedic national scientific meetings.<sup>1–4,8,11</sup> It is important to note that ASES open meetings have an abstract podium presentation publication rate (63%) comparable to other top scientific meetings such as AOSSM.<sup>11</sup> Furthermore, in a study looking at the annual AOSSM meetings from 1990 to 1993 and the annual Arthroscopy Association of North America (AANA) meetings from 1991 to 1993, researchers found overall publication rates of these two meetings to be 68% and 51%, respectively.<sup>16</sup> In direct comparison to our study, looking at ASES open and closed meetings, our results boast a similar overall publication rate to AOSSM and a much higher rate than AANA.

To the best of our knowledge, this is the first work analyzing ASES open and ASES closed meeting publications of abstracts. By having our search look at both open and closed podium presentations, we were able to discern differences in meeting type while still being able to calculate the overall publication rate from year to year. ASES open presentations had a higher publication rate than ASES closed presentations, although the difference was not significant (63%, 59%; OR 1.18,  $p = 0.4229$ ). Compared to studies analyzing publication rates of poster presentations, ASES podium presentations have a sub-

stantially higher rate of publication. Kinsella et al. reported a 57% poster presentation publication rate of AOSSM meetings from 2006 to 2010 while our results show a 63% open podium presentation publication rate and a 59% closed podium presentation publication rate.<sup>11</sup> This comparison may reveal a difference between qualities of research presented on the podium relative to the poster mirroring the results of similar studies suggesting a difference between the two types of presentation's (podium versus poster) quality in which publication rates are traditionally higher in podium presentations.<sup>12,13</sup>

Analyzing the journals in which these abstracts are published may also reveal interesting facts about the quality of scientific meetings. It is often the goal of authors to submit manuscripts to journals with the highest impact factor and greatest prestige. Additionally, the journal associated with the meeting in which abstracts are accepted are often more likely to publish the abstract's manuscript. In this analysis, the most common journal of publication was JSES with 50% ( $n = 111$ ). Interestingly, the next most common journals were JBJS ( $n = 42$ , 18.9%) and AJSM ( $n = 29$ , 13.1%). These journals are some of the most impactful journals in all of orthopedics and further speak to the quality of ASES open and closed meetings highlighting the academic excellence expected at ASES gatherings.

The level of evidence of presented abstracts at ASES open and closed meetings likely had an impact on the publication rate. However, a valid assessment was not possible in evaluating levels of evidence as most abstracts did not list a level of evidence in their submission (137/365, 37.5%). This inconsistency in reporting made it difficult to definitively evaluate the role of hierarchical evidence-based practices and its overall effect on publication rates.

## Limitations

There are a number of limitations in this present study. First, our search methodology was limited to only two search engines Google Scholar and PubMed. The use of these specific databases to pull articles parallels the methods used in similar studies on this issue; however, it is possible that studies may have been published in databases outside of our search causing our calculations to slightly underestimate publication rate.<sup>3,5,7</sup> Efforts were made to safeguard our results by having two independent researchers replicate the search methodology multiple times to ensure accurate findings. Another limitation of this analysis was the timeframe analyzed from 2008 to 2012 and the 3-year publication rate period following each meeting date. It is possible that some manuscripts may have been

published beyond this window of time four or more years after their initial presentation; however, our results show that less than 5% of accepted abstracts from 2008 to 2012 were published outside our 3-year rate of publication. Therefore, a vast majority of abstracts published (>95%) were done so within the expected timeframe (3-years) of presentation making our methodology representative of a true publication rate. Additionally, other studies have analyzed 3-year publication rate using a similar timeframe analysis, allowing comparisons between studies; thus, we conclude this was a safe and reliable way to analyze publication rates. A final limitation to our study is that data on the number of abstracts submitted to a meeting are unavailable. Therefore, if submission rates are higher for a particular meeting, it is possible that accepted abstracts may be of higher quality than a meeting with a smaller pool of abstracts to select from. This in turn could affect the publication rate of meetings, if they have a stronger pool of abstracts to choose from.

### Conclusions

Abstracts presented at the ASES open and ASES closed annual meetings have publication rates of 63% and 59%, respectively, with an overall publication rate of 61%.

### References

- Bhandari M, Devereaux PJ, Guyatt GH, Cook DJ, Swiontkowski MF, Sprague S, et al. An observational study of orthopaedic abstracts and subsequent full-text publications. *J Bone Joint Surg Am* 2002;84:615–21.
- Daluiski A, Kuhns CA, Jackson KR, Lieberman JR. Publication rate of abstracts presented at the annual meeting of the Orthopaedic Research Society. *J Orthop Res* 1998;16:645–9.
- DeMola PM, Hill DL, Rogers K, Abboud JA. Publication rate of abstracts presented at the shoulder and elbow session of the American Academy of Orthopaedic Surgery. *Clin Orthop Relat Res* 2009;467:1629–33. <http://dx.doi.org/10.1007/s11999-008-0474-2>
- Donegan DJ, Kim TW, Lee GC. Publication rates of presentations at an annual meeting of the American Academy of Orthopaedic Surgeons. *Clin Orthop Relat Res* 2010;468:1428–35. <http://dx.doi.org/10.1007/s11999-009-1171-5>
- Elder NC, Blake RL Jr. Publication patterns of presentations at the Society of Teachers of Family Medicine and North American Primary Care Research Group annual meetings. *Fam Med* 1994;26:352–5.
- Froom P, Froom J. Presentation deficiencies in structured medical abstracts. *J Clin Epidemiol* 1993;46:591–4.
- Gavazza JB, Foulkes GD, Meals RA. Publication pattern of papers presented at the American Society for Surgery of the Hand annual meeting. *J Hand Surg Am* 1996;21:742–5.
- Hamlet WP, Fletcher A, Meals RA. Publication patterns of papers presented at the annual meeting of the American Academy of Orthopaedic Surgeons. *J Bone Joint Surg Am* 1997;79:1138–43.
- Hopewell S, Clarke M, Moher D, Wager E, Middleton P, Altman DG, et al. CONSORT for reporting randomized controlled trials in journal and conference abstracts: explanation and elaboration. *PLoS Med* 2008;5:e20. <http://dx.doi.org/10.1371/journal.pmed.0050020>
- Jackson KR, Daluiski A, Kay RM. Publication of abstracts submitted to the annual meeting of the Pediatric Orthopaedic Society of North America. *J Pediatr Orthop* 2000;20:2.
- Kinsella SD, Menge TJ, Anderson AF, Spindler KP. Publication rates of podium versus poster presentations at the American Orthopaedic Society for Sports Medicine Meetings 2006–2010. *Am J Sports Med* 2015;43:1255–9. <http://dx.doi.org/10.1177/0363546515573939>
- Murrey DB, Wright RW, Seiler JG III, Day TE, Schwartz HS. Publication rates of abstracts presented at the 1993 annual academy meeting. *Clin Orthop Relat Res* 1999;359:247–53.
- Preston CF, Bhandari M, Fulkerson E, Ginat D, Egol KA, Koval KJ. The consistency between scientific papers presented at the Orthopaedic Trauma Association and their subsequent full-text publication. *J Orthop Trauma* 2006;20:129–33. <http://dx.doi.org/10.1097/01.bot.0000199120.45982.41>
- Scherer RW, Dickersin K, Langenberg P. Full publication of results initially presented in abstracts: a meta-analysis. *JAMA* 1994;272:158–62.
- Wang JC, Yoo S, Delamarter RB. The publication rates of presentations at major Spine Specialty Society meetings (NASS, SRS, ISSLS). *Spine* 1999;24:425–7.
- Yoo S, Oh G, Wang JC. Publication rates of presentations made at annual meetings of the American Orthopaedic Society for Sports Medicine and the Arthroscopy Association of North America. *Am J Orthop (Belle Mead NJ)* 2002;31:367–9.