



How to Make a Good Poster Presentation

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23.1 Introduction

Poster presentations are an important part of every scientific meeting [1, 17, 20]. Often new ideas and concepts are presented here [5]. A poster can be an excellent way to present a research project to an audience of interested peers and can be used to obtain feedback on a study [8, 16]. Peers can include fellow researchers but also surgeons, physical therapist, nurses, and engineers, and more [12, 19]. One major advantage of a poster presentation over a podium presentation is that a poster is available to be viewed during the entire duration of the meeting and can therefore gain more exposure [18]. Various types of poster presentations exist. Perhaps the most commonly known format is a printed poster displayed in an exhibit hall on a poster board (Fig. 23.1). However, more meetings are transitioning to electronic poster (e-posters). An e-poster is essentially a slide show presentation in which the slides advance automatically available on computers

distributed across the meeting (Fig. 23.2). Some meetings employ a combination of a physical and/or e-poster or an event to let the authors pitch the research presented on their poster with a short oral presentation. Regardless of the format, the poster should catch the attention of the audience while representing the study data in a clear and concise fashion [9].

Fact Box 23.1

A poster is an excellent way to present a research project and obtain feedback from peers.

This chapter aims to help orthopedic researchers in the preparation and presentation of a scientific poster. The learning objectives are to know the various different types of poster presentation, be familiar with the technical aspect of how to make a scientific poster, and understand what to do at the scientific meeting to get the most out of presenting research in poster format.

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23.2 Guidelines to Prepare a Poster Presentation

Because a poster is not designed as oral presentation, it should be prepared differently than a lecture. A poster should attract and engage the

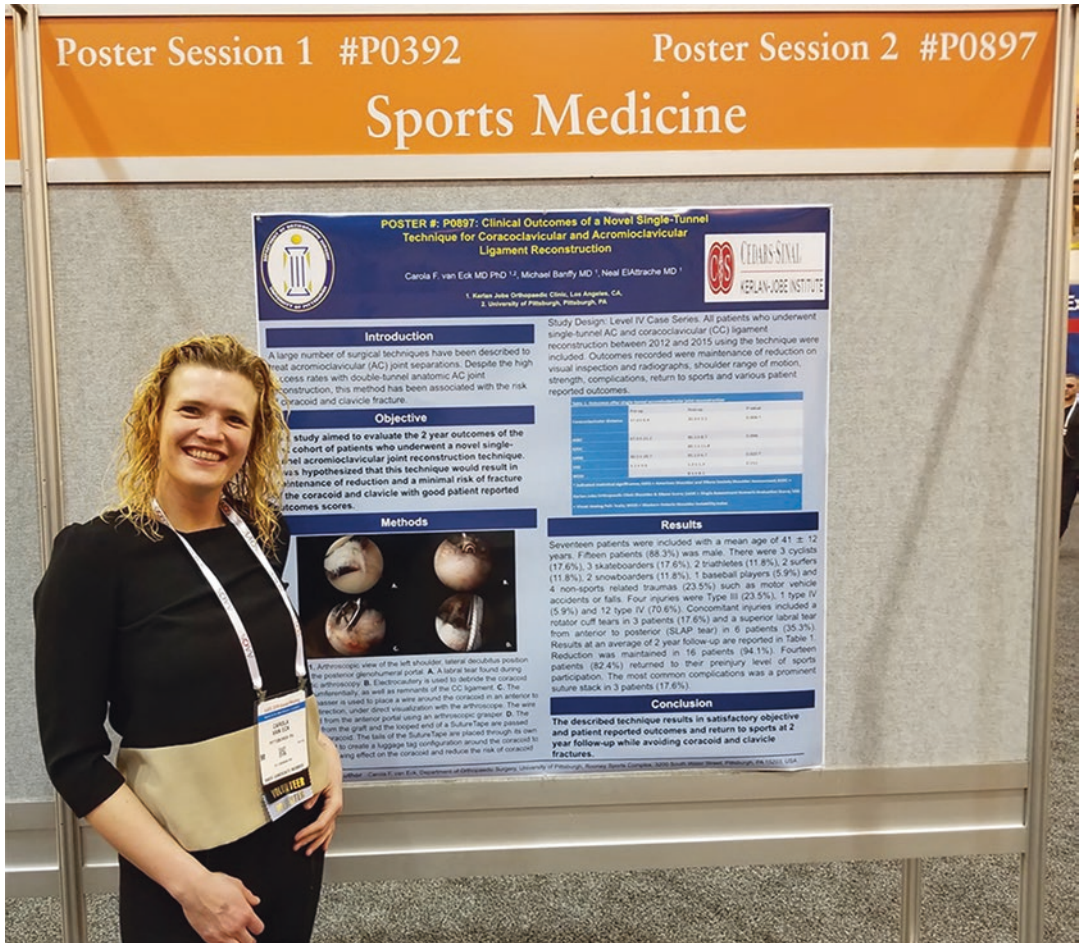


Fig. 23.1 Example of a conventional, printed poster displayed in an exhibit hall on a poster board

viewer by generating visual interest [2–4, 7, 10, 11, 13, 15, 21, 22]. However, when it comes to presentation of the data, this must be done on a stand-alone basis and be self-explanatory. This means that the readers of the poster should be able to understand the study aim, methods, results, conclusion, and significance, even when the presenting author is not there to explain anything. In addition, the figures must have clear figure legends and labeling where appropriate to facilitate this.

Generally, there should be a title portion, followed by objectives, methods, results, and discussion/conclusion section. Tables and/or figures can be used to allow for easier/more interesting presentation of the data. Conflicts of interest

should be disclosed, and contact information for the corresponding authors should be provided

Fact Box 23.2

A poster should be concise enough to attain the readers’ attention and also complete enough to allow interpretation without verbal presentation.

[14]. Detailed instructions on how to prepare these sections are discussed below.

The title should be concise and attract the attention of people passing by. Oftentimes titles are too long. Phrasing the title as a strong state-

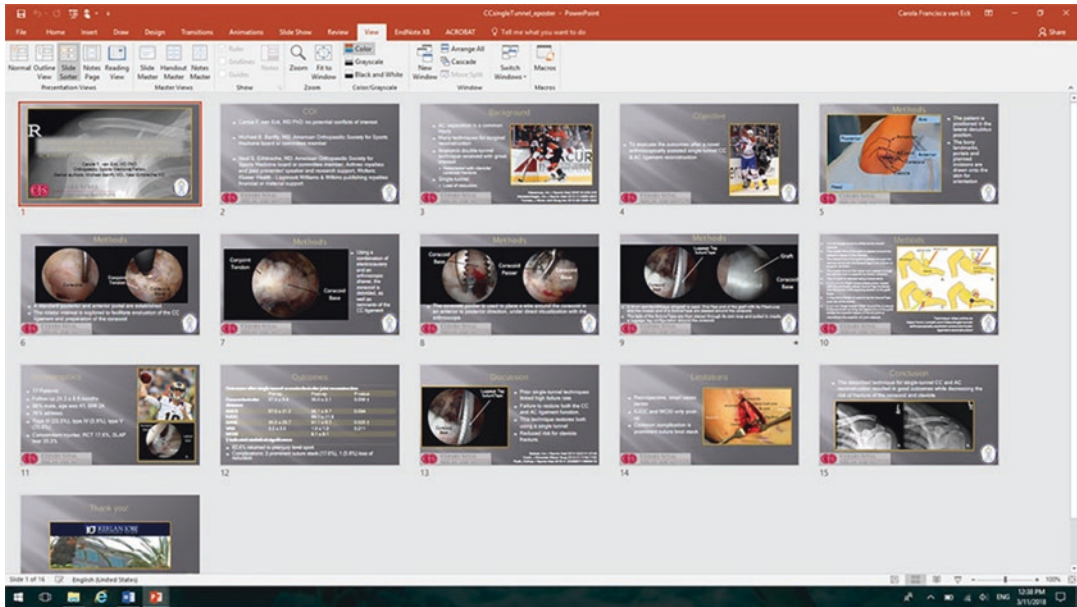


Fig. 23.2 Example of an e-poster. An e-poster is essentially a slide presentation in which the slides advance automatically on computers distributed across the meeting

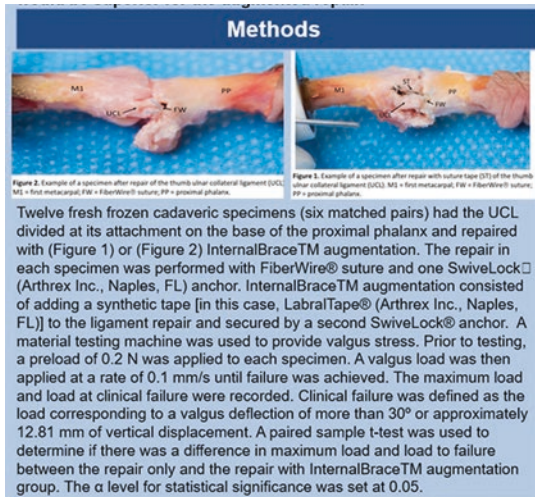
ment or a question is generally better to spark the interest of the readers. All authors with their credentials and the affiliated institution(s) should follow the title. If there are any conflicts of interest to disclose, this should also be done. The person in charge of making the poster should check the guidelines pertaining to how to disclose potential conflicts of interest from the specific meeting/organization.

The first text box should discuss the objective/hypothesis of the study. A short background may be provided if relevant for understanding the goal of the study. However, care must be taken to avoid making the poster too wordy and lose the attention of the reader. References are considered optional but again can be used sparingly if this is felt to be fundamental in understanding the rationale of the study. The methods section should be brief but present enough detail to understand the study design, nature, population, data collection, and statistical analysis. If tables or figures can be used instead of text, this should be strongly considered (Fig. 23.3).

Similar to the methods, the results are often better presented in table or figure format to catch and keep the reader's attention. Unlike in a manuscript, only the most important findings of the study should be described keeping this section short and concise (Fig. 23.4). The discussion/conclusion section should state the summary of the study. A brief discussion follows. The focus of the discussion should be on clinical relevance of the work presented, limitations, and future implications. Similar to the introduction section, the use of references is generally considered optional, and references should be used sparingly to decrease unnecessary wordiness of the poster distraction from the message of the research.

23.3 Technical Aspects

Perhaps equally important to the content of the poster is how well this content is presented [2–4, 7, 10, 11, 13, 15, 21, 22]. To start, the preparer of



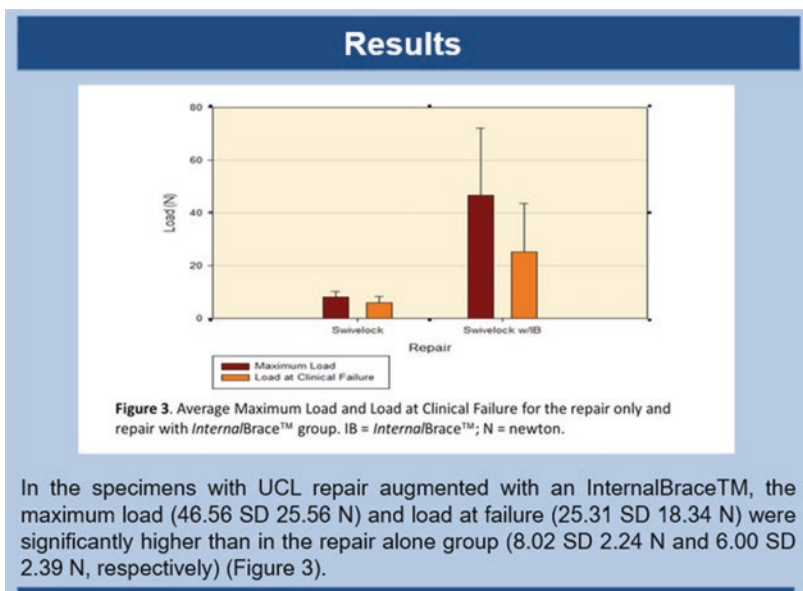
Methods

Twelve fresh frozen cadaveric specimens (six matched pairs) had the UCL divided at its attachment on the base of the proximal phalanx and repaired with InternalBrace™ augmentation. In the repair only group, the adductor aponeurosis was released and reflected volarly and the extensor mechanism dorsally. The joint capsule was incised at the dorsal border of the UCL. The UCL was detached from the volar base of the proximal phalanx and left attached at its origin on the first metacarpal. The guidewire for the suture anchor (3.5 mm DX SwiveLock® SL, Arthrex, Naples, FL, USA) was placed at the UCL attachment site on the volar base of the proximal phalanx. The guidewire was over drilled with a 3.2 mm drill. A 3-0 FiberWire® suture (Arthrex, Naples, FL, USA) was placed around the fork tip of the suture anchor and the anchor was placed into the drill hole, securing the suture in place. The suture was then passed through the distal UCL in horizontal mattress fashion to perform a direct repair of the ligament. In the repair with Suture Tape Augmentation Group the exposure was the same as for ligament repair only. The guidewire for the suture anchor was again placed at the UCL attachment site on the volar base of the proximal phalanx and over-drilled with a 3.2 mm drill. In addition to the 3-0 FiberWire® suture, a LabralTape® (Arthrex, Naples, FL, USA) was also placed around the fork tip of the suture anchor and the anchor was placed into the drill hole securing both the suture and tape in place. LabralTape® is a synthetic surgical tape that is currently being used to augment ligament repairs or reconstructions and provide internal bracing while biologic healing occurs.²² As was performed in the repair-only specimens, the FiberWire® suture was passed

Fig. 23.3 With regard to the methods section of the poster, use tables or figures instead of text where possible. The example on the left shows how figures are used to gain the readers’ interest as well as to reduce the text. In

the example on the right, the same information is conveyed using text only. Text is less appealing and harder to interpret

Fig. 23.4 Unlike in a manuscript, only the most important findings of the study should be discussed in the results section, keeping the result section short and concise. The example on the top lists only the key findings and uses an easy to interpret graph. The example on the bottom describes the same findings in text-only format. The latter is more difficult to interpret for the reader and may not generate as much visual interest



Results

The maximum load in the UCL repair with suture tape augmentation specimens (mean 46.56, standard deviation 25.56) was significantly higher than in the UCL repair-only specimens (mean 8.02, standard deviation 2.24) ($p=0.002$). The load at failure was significantly higher in the UCL repair with suture tape augmentation specimens (mean 25.31, standard deviation 18.24) than in the UCL repair-only specimens (mean 6.00, standard deviation 2.39) ($p=0.002$). Five of the six repairs (83.3%) incorporating the suture tape augmentation failed due to some degree of tape slippage, with one sample failing due to anchor pull-out. In the repair-only specimens, failure occurred due to a variety of different failure modes.

the poster should check the specific meeting to find out the dimension of the poster, which are allowed and recommended. Most posters are created using PowerPoint [Microsoft, Redmond, WA, USA] or something comparable. If you are part of a larger academic institution, hospital system, or research group, it may be worth checking if poster templates are in existence of your institution, which you can then utilize.

your institution. This can include the organization logo, picture, or slogan (Fig. 23.5). Conversely, this may benefit you as much as it benefits your institution, as the reputation of your institution alone may attract viewers to your poster. If no such template exists and you are the first person making it, try to pick a calm background color, perhaps matching your institution's logo colors, combined with a text color which stands out from the background [4]. For example, avoid yellow text on a white background. Refrain from using colors, which may be unconsciously perceived to be offensive such as red text. There is a fine line between attracting attention and the poster being a visual overload. The size and font of the text are also very important. It is best to use a neutral font that is easy to read from a distance, such as Arial or Sans Serif. Generally, the size of the letter is the largest for the title and section headings (at least >62), medium sized for the text (at least >44), and the smallest for the references and corresponding authors' contact information (>36) (Fig. 23.5) [2–4, 7, 10, 11, 13, 15, 21, 22].

Fact Box 23.3

Optimal visual poster presentation includes a calm background color and a neutral font which stands out from the background and is large enough to be read from a distance.

The optimal format to present and promote your organization is to have a unanimous format that is easily recognized by others as belonging to



Fig. 23.5 The official template for ESSKA (European Society Sports Traumatology, Knee Surgery and Arthroscopy) congress. The optimal way to present and promote yourself, your poster, and your organization is to

have a unanimous format, which includes your logo. Use a calm background color and a neutral font with a color that stands out from the background

Lastly, if your poster is a printed poster, it will need to be printed ahead of the conference. Several companies are available online which perform scientific poster printing. You will need to upload your presentation file to their website, and generally you can select if you would like to see proofs before printing. This may be worthwhile when the poster contains pictures or graphs to ensure the resolution is high enough to provide a good-quality poster at the size that it needs printed on. Take into account that receiving the printed poster may take several weeks [3]. Allow extra time to reprint the poster if upon its arrival misprints or mistakes are identified and a new copy needs to be printed. Many large meetings now offer poster-printing services, which will have your poster ready for you at the meeting site. The major benefit is that this avoids the burden of traveling with several posters. However, the major limitation is that if you arrive to find there is something wrong with your poster, there will likely not be sufficient time for revisions. These pros and cons will have to be considered.

23.4 At the Conference

When arriving at the meeting, you will need to hang up (or upload) your poster. Be sure to check your poster numbers, location, and setup times on the specific conference website. Some meetings provide pushpins to hang up the poster, but this is not always the case, so it is best to check in advance.

Ensure that the presenter of the poster is available to stand with the poster at least during the mandatory time slots but more frequently than this if possible. Presenters can be disqualified for submission during future meeting if these rules are not obeyed. Popular times for people to view posters are during the (lunch) breaks and of course the poster sessions. Showing the poster to colleges or presenting it at a lab or research meeting at one's own institution prior to the scientific meeting may help generate comments and help the poster presenter be ready to answer any questions the audience might ask. Special judges may be assigned to score posters for awards. These are

usually based on the overall presentation, including the abstract, the poster itself, and the attentiveness and presence of the presenting author. The latter includes proper attire following the established dress code for the meeting. If unsure about the dress code, ask someone who has been to the meeting before or contact the meeting directly. It is always better to air on the side of being overdressed. Remember, you are representing yourself, your research, and your institution.

Fact Box 23.4

Proper dress code is important when presenting a poster as it reflects on yourself, your research, and your institution.

Meeting guidelines should be checked as poster presenters can be disqualified for submission during future meeting if rules are not followed.

A consideration can be to add a handout to your poster, which the readers may take with them. This could list the abstract, key points, and the contact information for the corresponding authors. Some meetings will have the abstract for each study available for registered attendees online, on a flash drive, or printed in the program book [6, 23].

Take-Home Message

- Poster presentations are a key component of any scientific conference.
- Often new ideas and concepts are presented here.
- Various types of poster presentations exist, including a printed format displayed in an exhibit hall, e-posters available on computers, and a combination of a poster with a short talk.
- A poster should attract and engage the viewer by generating visual interest.
- However, when it comes to presentation of the data, this must be done on a stand-alone basis and be self-explanatory.

- The person in charge of making the poster should check the guidelines for the meeting the poster is being presented.
- Although the content of the poster is important, so is the quality of the visual presentation.
- Choose previously used templates from your institution to ensure uniformity and easy identification of presentations related to the institution.
- Ensure that the presenter of the poster is available to stand with the poster during the mandatory time slots.
- Reviewing the poster with colleagues prior to the scientific meeting may help generate comments and improve the poster (presentation).
- The presenter should be dressed in proper attire.
- It is always better to air on the side of being overdressed.
- You are representing yourself, your research, and your institution [7].

References

1. Abicht BP, Donnenwerth MP, Borkosky SL, Plovanich EJ, Roukis TS. Publication rates of poster presentations at the American College of Foot and Ankle Surgeons annual scientific conference between 1999 and 2008. *J Foot Ankle Surg.* 2012;51:45–9.
2. Beal JA. Preparing for a poster session—some practical suggestions. *Mass Nurse.* 1986;56:5.
3. Boullata JI, Mancuso CE. A “how-to” guide in preparing abstracts and poster presentations. *Nutr Clin Pract.* 2007;22:641–6.
4. Briscoe MH. Preparing scientific illustrations: a guide to better posters, presentations, and publications. New York: Springer; 1996.
5. Daruwalla ZJ, Huq SS, Wong KL, Nee PY, Murphy DP. “Publish or perish”—presentations at annual national orthopaedic meetings and their correlation with subsequent publication. *J Orthop Surg Res.* 2015;10:58.
6. 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.
7. Erren TC, Bourne PE. Ten simple rules for a good poster presentation. *PLoS Comput Biol.* 2007;3:e102.
8. Frank RM, Cvetanovich GL, Collins MJ, Arns TA, Black A, Verma NN, Cole BJ, Forsythe B. Publication rates of podium versus poster presentations at the Arthroscopy Association of North America Meetings 2008–2012. *Arthroscopy.* 2017;33:6–11.
9. Gundogan B, Koshy K, Kurar L, Whitehurst K. How to make an academic poster. *Ann Med Surg (Lond).* 2016;11:69–71.
10. Hamilton CW. At a glance: a stepwise approach to successful poster presentations. *Chest.* 2008;134:457–9.
11. Hand H. Reflections on preparing a poster for an RCN conference. *Nurse Res.* 2010;17:52–9.
12. Kleine-Konig MT, Schulte TL, Gosheger G, Rodl R, Schiedel FM. Publication rate of abstracts presented at European Paediatric Orthopaedic Society Annual Meetings, 2006 to 2008. *J Pediatr Orthop.* 2014;34:e33–8.
13. Lourie RJ. Preparing a poster presentation. *Nurse Educ.* 1989;14:10, 18, 23.
14. Matsen FA 3rd, Jette JL, Neradilek MB. Demographics of disclosure of conflicts of interest at the 2011 annual meeting of the American Academy of Orthopaedic Surgeons. *J Bone Joint Surg Am.* 2013;95:e29.
15. Miller JE. Preparing and presenting effective research posters. *Health Serv Res.* 2007;42:311–28.
16. Naziri Q, Mixa PJ, Murray DP, Grieco PW, Illical EM, Maheshwari AV, Khanuja HS. Adult reconstruction studies presented at AAOS and AAHKS 2011–2015 Annual Meetings. Is there a difference in future publication? *J Arthroplasty.* 2018;33(5):1594–7.
17. Ohtori S, Orita S, Eguchi Y, Aoki Y, Suzuki M, Kubota G, Inage K, Shiga Y, Abe K, Kinoshita H, Inoue M, Kanamoto H, Norimoto M, Umimura T, Furuya T, Masao K, Maki S, Akazawa T, Takahashi K. Oral presentations have a significantly higher publication rate, but not impact factors, than poster presentations at the International Society for Study of Lumbar Spine meeting: review of 1126 abstracts from 2010 to 2012 meetings. *Spine (Phila Pa 1976).* 2018;5:1347–54.
18. Preston CF, Bhandari M, Fulkerson E, Ginat D, Koval KJ, Egol KA. Podium versus poster publication rates at the Orthopaedic Trauma Association. *Clin Orthop Relat Res.* 2005;(437):260–4.
19. Schulte TL, Trost M, Osada N, Huck K, Lange T, Gosheger G, Holl S, Bullmann V. Publication rate of abstracts presented at the Annual Congress of the German Society of Orthopaedics and Trauma Surgery. *Arch Orthop Trauma Surg.* 2012;132:271–80.
20. Voleti PB, Donegan DJ, Baldwin KD, Lee GC. Level of evidence of presentations at American Academy of Orthopaedic Surgeons annual meetings. *J Bone Joint Surg Am.* 2012;94:e50.
21. White A, White L. Preparing a poster. *Acupunct Med.* 2003;21:23–7.
22. Wipke-Tevis DD, Williams DA. Preparing and presenting a research poster. *J Vasc Nurs.* 2002;20:138–42.
23. Zelle BA, Zlowodzki M, Bhandari M. Discrepancies between proceedings abstracts and posters at a scientific meeting. *Clin Orthop Relat Res.* 2005;(435):245–9.