

Athletic Trainers' Selection Behaviors Related to Multi-Session Continuing Education Conferences

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Context: Continuing education (CE) in athletic training is commonly achieved at multi-session conferences.

Objectives: To explore athletic trainers' (ATs') planning practices at multi-session conferences regarding format types, preferred domains of athletic training practice, and ideal number of concurrent sessions.

Design: Cross-sectional survey with quantitative and qualitative questions.

Setting: Web-based

Patients or Other Participants: 8660 ATs surveyed

Intervention(s): We established content and face validity and piloted the tool before use. We distributed the survey via email weekly for 6 weeks. Trustworthiness of qualitative data was established with multiple-analyst triangulation and external auditing. Data were collected through a Web-based survey comprised of demographic questions and questions regarding CE choices.

Main Outcome Measure(s): Quantitative data- measures of central tendency, standard deviations, and frequencies; qualitative- inductive coding method.

Results: 908 ATs responded (response rate = 10.5%) and 767 were included in analysis. Respondents (age, $y = 38 \pm 11$; females = 367, males = 249, missing/prefer not to answer = 151; 15 ± 11 years of clinical experience) most preferred to attend workshops (78%, $n = 598/767$), large-group lectures (75.9%, $n = 582/767$), and small-group lectures (63.5%, $n = 487/767$). They were motivated to select preferred session formats by learning preferences (38.4%, $n = 239/623$) and interest in the topic (37.4%, $n = 233/623$). Examination, assessment, and diagnosis was the most preferred domain (80.7%, $n = 619/767$). Health care administration and professional responsibility was least preferred (41.9%, $n = 321/767$). Practical application was the main influencer (53.4%, $n = 337/631$) to attend sessions. Almost half (49.7%, $n = 381/671$) of respondents stated that their CE selection behaviors changed depending on the number of concurrent sessions. They prioritized sessions by interest when conflicts occurred (31.4%, $n = 211/671$).

Conclusion: Reducing feelings of indecision and ensuring applicable sessions for ATs is important. Multi-session conferences should include sessions that align with attendee preferences relative to domains of practice and session formats. However, attendee preferences provide faulty guidance for CE decision-making and should not be the only mechanism to drive planning.

Key Words: continuing medical education, symposia, maintenance of competence, professional development

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KEY POINTS

- Athletic trainers (ATs) preferred didactic session formats (ie, lectures) and hands-on workshops; their least preferred session formats were problem-centered discussions and poster presentations.
- Athletic trainers preferred to learn about content that they were interested in or that was most relevant to their setting. Specifically, ATs had interest in the examination, assessment, and diagnosis domain and the injury/illness prevention and wellness promotion domain of athletic training practice.
- Athletic trainers believe that 3 ± 2 concurrent sessions are ideal to allow for a variety of topics and formats while limiting feelings of indecision and session conflict.
- When faced with session conflicts, ATs selected sessions based on their interests and not objective needs that addressed knowledge gaps in their practice.

INTRODUCTION

Continuing education (CE) in health care is necessary to maintain competence, understand and fill gaps in current practice, and remain up-to-date with current best practices and new techniques.¹⁻⁵ Continuing education can be used to develop and promote continued competence of current knowledge and clinical skills while elevating the profession through advancing clinical expertise and professional judgment.¹ The concept of CE is relatively standard across various health care professions,¹⁻⁵ and commonly includes maintenance of industry best practices, advanced skill acquisition, and the intent to advance the respective profession through the application of innovative ideas and knowledge into practice.¹⁻⁵ Ultimately, CE requirements among the health care professions are used to improve patient outcomes and cultivate a culture of growth and advancement throughout health care.¹⁻⁵

Although there has been some evaluation of CE in athletic training, there has been little examination of the entire enterprise, specifically to understand the larger delivery mechanisms for developing and implementing CE sessions. Specifically, athletic trainers (ATs) have reported that they value CE⁶ and have an overall positive attitude toward the process of CE.⁷ Time, irrelevance to practice, cost, and associated travel are all deterrents to completion of CE requirements for ATs.^{6,8} One of the most common ways that ATs gain CE units (CEUs) is by attending conferences and symposia.⁹ In an article by Armstrong and Weidner,⁹ 46.6% of respondents reported attending the National Athletic Trainers' Association (NATA) Annual Meeting and Clinical Symposia. Many respondents also attended state and regional symposia: 36% and 30.2%, respectively.⁹

Identification of ATs' knowledge gaps in practice may have a profound impact on their ability to pursue CE courses that fill

those gaps.¹⁰ A simple knowledge assessment can increase the likelihood of ATs to pursue CE in areas they may perceive as deficient, but the likelihood to pursue CE in those areas increases when specific feedback is given to the learners.¹⁰ In a review of available literature, there have been variable findings relative to the immediate acquisition and short- or long-term retention of knowledge in CE for the allied health professions.¹¹ After synthesis, the authors of this literature review suggested the use of learning outcomes and assessments to ensure that CE sessions influence patient care.¹¹

The basic application of learning theory can help in the development of CE sessions, but knowledge and skill acquisition for adult learners does pose some specific challenges. Behaviorism, learning that is focused on repetition and physical skill acquisition, can be used to facilitate the development of new skills.^{12,13} A cognitivist approach focuses on understanding new ideas and ways of thinking without physical skill development.^{12,13} Constructivism is the most complex of these theories, positioning learners in specific experience-based activities in which they deploy their own problem-solving skills.^{12,13} These learning theories are relatively basic, but they encompass many of the CE sessions we see in athletic training. For instance, lecture often focuses on the cognitivist theory, whereas learning labs are behaviorist and peer-to-peer discussions are constructivist. Pedagogy is an overarching learning construct in which the learner is dependent on the teacher for knowledge acquisition and guidance through the materials.¹³ Pedagogy is most often found in behaviorist and cognitivist teaching, because of the dependence on teacher delivery of new knowledge.¹³ In contrast, andragogy may be a more effective model for clinicians to engage in the CE process because learners have an active role in their education. Andragogy relies on experiential learning opportunities that are problem centered and applicable to the learner's current situations.^{13,14} Thus, planning for CE should be guided by the aforementioned preferences of ATs, but also with andragogic principles in mind.

Although convenient, the formal method of didactic educational delivery may not be optimal for learners to demonstrate changes in clinical practice.^{1,15-17} Continuing education research indicates that more informal methods, like reading journal articles, reviewing journal articles, or reading other athletic training-related textbooks, seem to drive the development of clinical abilities and change views on patient care, whereas formal modes of CE increase overall knowledge in content areas.^{9,15,16} Additionally, ATs believe formal CE helps them to stay current with new trends and maintain evidence-based practices.¹⁸ Both informal and formal modes of CE are important to reduce the barriers of implementation of knowledge and skills in clinical practice. Developing CE opportunities based on relevancy to clinical practice and understanding the overall needs of the learners are the most common recommendations to drive change in clinical

practice.^{6,7} Other recommendations from the research are to use more Web-based interactions and modules, to consider more informal activities for CEUs, and that CE opportunities should develop into a catalyst for change in patient care.⁷⁻⁹

Many recommendations made throughout research focus on the efficiency of CE opportunities for learners,^{1,6-10} and only a few focus on how learners can take a more active role in their CE experience.^{10,17} The next step in the research is to better understand specific AT choices and preferences regarding CE opportunities. The purpose of this study is to determine how clinicians plan for CE and select courses while at these multi-session conferences. By determining how ATs are planning for CE consumption at multi-session conferences and pairing that with their individual patterns in assessment of needs, we will be able to see whether CE is being used to address gaps in clinical practice, whether multi-session conference development is effective, and whether learners are well engaged in the materials offered.

METHODS

Research Design

We used a cross-sectional survey design with both qualitative and quantitative aspects to gain valuable information from the current population of ATs. The main purposes were to determine what session format types ATs prefer, which domains of athletic training practice they prefer to learn about, and their motivations for selecting certain sessions and domains. We also asked what their preferred number of concurrent sessions was and how their session selection behaviors changed because of the number of concurrent sessions available. The questionnaire also included a section for demographics at the end. The Indiana State University Institutional Review Board regarded this study as exempt before data collection occurred.

Respondents

We gained access to 8698 random email addresses via the NATA research survey service. After bounced emails and duplicate emails were removed, the survey was sent out to 8660 ATs. All currently employed NATA members were eligible for the study, but those who had never attended a multi-session conference were excluded. Of the 8660 ATs recruited, we had 908 responses (10.5% response rate). Of the 908 responses, 767 (84.4%) were included in the analysis. Of our respondents, 19 did not agree to participate and 87 had not been to a multi-session conference. A total of 35 selected that they would like to participate but did not answer any additional questions, and thus were removed from the analyzed responses. Respondents voluntarily answered questions throughout the survey, and as such, not all respondents answered all questions. All questions answered were included in the data analysis.

Instrumentation

We used Qualtrics (Provo, UT), an online survey platform, to develop a questionnaire to assess the planning practices of ATs regarding CE. The tool was developed by a panel of 3 researchers. The design of the tool took into account the recommendations of previous research in athletic training CE

Table 1. Questionnaire Items

Question	Response Type
Inclusion/exclusion criteria	
Have you ever attended a multi-session conference to obtain continuing education units (CEUs)?	Yes/no
Session format preferences	
Once you have decided you are going to attend a multi-session conference, which types of session formats do you choose to attend?	Select all that apply
What motivates you to select these formats for continuing education formats?	Open-ended
Number of concurrent session preferences	
What is the ideal number of concurrent sessions, or sessions happening at the same time, at multi-session conferences?	Open-ended
Why?	Open-ended
Preferred domains of athletic training	
Which domains of athletic training, as defined by the Board of Certification (BOC), do you prefer to learn about at multi-session conferences?	Preferred/not preferred
What motivates you to choose sessions focused with content in your preferred domains?	Open-ended
Session selection/conflict behaviors	
Do your selection behaviors change depending on the number of concurrent sessions available?	Yes/no/unsure
Please explain why your session selection behaviors change.	Open-ended
Please explain why you are unsure if your session selection behaviors change.	Open-ended

regarding the exploration of ATs' actual CE selection behaviors and their CE participation trends.^{8,10} Specific terminology of the tool was consistent with previous research⁹ and with the Board of Certification's athletic trainer practice analysis.¹⁹ Respondents were asked to determine whether or not they had been to a symposium or multi-session conference. They were then asked about their session type preferences and motivations for selection. Session types used in this study were carried over from previous research by Armstrong and Weidner.⁹ Respondents were then asked which domains of athletic training practice they preferred to learn about and what influenced those preferences. (Board of Certification Approved Providers are required to list the domains of athletic training practice addressed within each session.) Additionally, respondents were asked what they thought was the best number of concurrent sessions and how their selection habits were affected by the number of concurrent sessions. All questions regarding domain of athletic training practice preferences, format preferences, and ideal number of concurrent sessions are shown in Table 1. To ensure respondents were able to differentiate among

Table 2. Session Format Types and Associated Learning Theories

Session Format Type	Definition	Learning Theories
Clinical workshop	An interactive, hands-on course designed to practice clinical skills or learn new techniques (eg, manual therapy techniques, suturing, dry needling)	Behaviorism, cognitivism, constructivism
Clinical case report	A lecture-style presentation of a unique patient case or series of cases that is not limited to results of an intervention; often includes time for Q & A at the end	Cognitivism
Small-group lecture	A presentation with less than or equal to 30 people in the audience; often includes time for Q & A at the end	Cognitivism
Small-group discussion	A facilitator-led, open discussion with less than or equal to 10 people attending	Social constructivism
Large-group lecture	A presentation with more than 30 people in the audience; often includes time for Q & A at the end	Cognitivism
Large-group discussion	A facilitator-led, open discussion with more than 10 people attending	Social constructivism
Panel discussion	A group of experts responding to prepared or fielded questions from the audience	Cognitivism
Research presentation	A presentation of research describing the purpose, results, implications, and significance of the findings	Cognitivism
Research poster presentation	A presentation of research in a visual format that allows you to speak one on one with the primary investigator(s) and to see multiple posters at one time	Cognitivism

Abbreviation: Q & A, question and answer.

formats, we provided definitions (Table 2). At the end of the survey, the respondents were asked to complete a demographic section, which included 8 questions. These questions included age, years of work experience, ethnicity, gender, NATA district membership, route to certification, and highest earned degree. The questionnaire included multiple-choice, open-ended, ranking, and choose-all-that-apply question types.

We conducted a content analysis review using 3 content experts with 15 ± 4 years of experience. Their areas of expertise include CE and professional development, quantitative and qualitative research methodology and analysis, and Qualtrics. They reviewed an instrument with 21 items. Among those items, 6 remained unchanged, 10 were revised based on the feedback, 4 were removed, and 10 were added. We then conducted a pilot study among 11 ATs who met the project inclusion criteria and were members of the doctorate in athletic training program at Indiana State University. We were able to ensure tool navigation and asked for feedback, specifically on 2 items and the overall tool, to ensure we were soliciting the responses we expected, particularly for open-ended response items. Individuals who piloted the study were disqualified from participation. Minor changes were then made to the tool and descriptions of the session types were added based on feedback from the pilot study respondents.

Procedures

The questionnaire was sent to 8660 ATs via the Qualtrics software. The initial email was sent on Tuesday, April 24, 2018, at 10:35 AM (all times in Eastern Daylight Time). Follow up email reminders were sent weekly on May 1 at 10:00 AM, May 8 at 11:00 AM, and May 15 at 11:30 AM. Because of a low response rate after the initial distribution schedule, we distributed the survey again after 3 weeks, on June 5 at 11:30 AM and June 12 at 11:17 AM. We then compared early

and late responders on key outcome variables and demographic characteristics using separate Mann-Whitney *U* tests to determine any statistically significant differences between early and late responses, which established that early and late responders were not statistically different on characteristics of age, years of work experience, ethnicity, gender, route to certification, or highest degree earned ($P > .05$). We also identified that early and late responders demonstrated no statistical difference related to their perception about the ideal number of sessions ($P = .377$) and whether their selection behaviors changed depending on the number of sessions available ($P = .496$). Late-responder analysis has been equated with nonresponder analysis and verifies that, even with a small response rate, the findings are representative.²⁰ Once data collection ended, we downloaded the responses and immediately deidentified the results to maintain confidentiality. Complete and partial responses were included in analysis.

Statistical Analysis

Quantitative data were analyzed for measures of central tendency, standard deviations, and frequencies (Microsoft Excel, Redmond, WA). Qualitative data were analyzed using an inductive coding process. We systematically evaluated the responses to develop domains. The 3-person data analysis team (A.M.B., J.R.E.N., L.E.E.) worked through several phases of review to identify emerging themes and core ideas, eventually developing a consensus codebook before grouping responses among the common domains determined.²¹

The data analysis team consisted of 1 novice researcher (first-time coder) and 2 experienced members (each with 7 years of qualitative data analysis experience). Initially, the data analysis team analyzed the first 100 responses, identifying themes individually. The team then compared the themes they found and developed an initial draft of the codebook. The first 200 responses were then coded into the codebook and

Table 3. Participant Demographics (N = 767)

Characteristic	Frequency (%)
Gender	
Male	249 (32.5)
Female	367 (47.8)
Preferred not to say/did not answer	151 (19.7)
Highest degree earned	
Bachelor's (BA, BS, etc)	108 (14.1)
Master's (MA, MS, etc)	427 (55.7)
Research/academic doctorate (PhD, EdD, etc)	55 (7.2)
Clinical doctorate (DAT, DSci, DHSc, etc)	31 (4.0)
Preferred not to say/did not answer	146 (19.0)
Route to certification	
Internship program	147 (19.2)
Accredited professional bachelor's program	413 (53.8)
Accredited professional master's program	60 (7.8)
Preferred not to say/did not answer	147 (19.2)

additional themes were noted. The research team conferred and updated the codebook. This process occurred multiple times until a final codebook with adequate verbiage was found to accurately describe the overarching domains found. Once the final codebook was developed, the principal investigator coded all responses. The responses provided could fit into multiple codes or could be left without codes if they did not provide enough information or did not fit into a common theme. Once the coding of all responses was completed by the principal investigator, the codebook was sent to the research team for review. Once individual review was completed, the data analysis team held a consensus meeting. If there was disagreement on a code, a majority decision (2 of 3) was made and codes were finalized. Once the codebook and coding were finalized, the codebook and all coded data were externally audited by a coder with 8 years of experience in qualitative data analysis. The final stage of data analysis was to calculate frequencies of the codes. In summary, trustworthiness was established with multiple-analyst triangulation and external auditing. The coding of qualitative data was achieved by a 3-person data analysis team who came to a two-thirds consensus on all codes. Once the coding was complete, it was confirmed by an external auditor.

RESULTS

A total of 767 ATs (38 ± 11 years; 15 ± 11 years of experience) were included in data analysis (Table 3). We identified 4 overarching domains for the qualitative responses: session format preferences, domains of athletic training practice selection influencers, sources of session conflicts, and session prioritization, with each of these domains containing 4 categories. For session format preferences, respondents tended to select session formats based on their individual learning preferences, topic or content of interest, practical application, or staying up-to-date. Session selection influencers were deemed to be topic or content of interest, ability to stay up-to-date, practical application, and individual perceived needs. For session conflicts, respondents indicated that the ideal number of sessions chosen was based on variety,

Table 4. Qualitative Analysis of Open-Ended Responses

Domains and Categories	Frequency (%)
Session format preferences (N = 623)	
Learning preferences	239 (38.4)
Topic/content of interest	233 (37.4)
Practical application	91 (14.6)
Up-to-date	67 (10.8)
Domain Selection Influencers (N = 631)	
Practical application	337 (53.4)
Topic/content of interest	149 (23.6)
Up-to-date	140 (22.2)
Perceived needs	127 (20.1)
Session conflict (N = 672)	
Variety	367 (54.6)
Fear of missing out	182 (27.1)
Indecision	180 (26.8)
It depends	59 (8.8)
Session prioritization (N = 671)	
Topic or content of interest	211 (31.4)
Practical application	97 (14.5)
Perceived needs	66 (9.8)
Format	21 (3.1)

fear of missing out, indecision, or that “it depends.” Sessions were commonly prioritized based on format, practical application, topic or content of interest, and perceived needs. Table 4 shows all domains and categories and their frequencies.

Session Format Preferences

The ATs in the study preferred to attend clinical workshops, large-group lectures, and small-group lectures the most (78%, 75.9%, and 63.5%, respectively). The least preferred formats of CE were large-group discussions, research poster presentations, and small-group discussions (26.5%, 27.4%, and 29.5%, respectively). Table 5 demonstrates all the session format types and the ATs' preferences toward each type. When we asked participants, what motivated them to select a specific format type, we found 4 common categories. Athletic trainers were motivated by (1) individual learning preferences, (2) topic or content of interest, (3) practical application, or (4) staying up-to-date.

Table 5. Athletic Trainers' Continuing Education Session Format Preferences (N = 767)

Session Format	Frequency (%)
Clinical workshop	598 (78.0)
Clinical case report	365 (47.6)
Small-group lecture	478 (63.5)
Small-group discussion	226 (29.5)
Large-group lecture	582 (75.9)
Large-group discussion	203 (26.5)
Panel discussion	434 (56.6)
Research presentation	409 (53.3)
Research poster presentation	210 (27.4)

Table 6. Athletic Trainers' Continuing Education Preferred and Not Preferred Domains to Learn About (N = 767)

Domain	Preferred Frequency (%)	Not Preferred Frequency (%)
Injury/illness prevention and wellness promotion	615 (80.2)	56 (7.3)
Examination, assessment, and diagnosis	619 (80.7)	43 (5.6)
Immediate and emergency care	566 (73.8)	95 (12.4)
Therapeutic intervention	580 (75.6)	79 (10.3)
Health care administration and professional responsibility	346 (45.1)	321 (41.9)

Individual Learning Preferences. Respondents were highly motivated by their personal learning preferences (38.4%, n = 239 of 623) to select sessions of these format types. They found that certain formats would allow them to understand the materials with more efficiency. For example, one respondent discussed how the session format should be aligned with the content presented:

I enjoy a variety of formats since I recognize that some specific types of content are more effective using different formats. For example, I want to learn and apply hands-on skills in a learning lab, and I enjoy hearing lectures, research presentations, and seeing posters to gather new knowledge quickly. However, some topics are more meaningful when discussion with the audience occurs, yet I still haven't experienced a large discussion format that went well.

Another respondent said:

I prefer to grasp the information as thoroughly as possible, and smaller groups tend to be the best way for me because everyone seems engaged versus large sessions where people are there to meet a CEU need and not really understand the information.

Athletic trainers with these responses were able to articulate how each format type could supplement their learning by aligning the format with the educational content to be delivered. Respondents clearly articulated their preferred learning styles and discussed how they selected session formats that aligned with these learning styles. Each format type allowed ATs to be more engaged in the materials or gain experience with hands-on practice, or generally reinforced content that they were learning.

Interest in Topic or Content. The next most common motivator for session selection was interest in the topic or content. Some ATs (37.4%, n = 233 of 623) felt that the topic and/or content was the ultimate deciding factor for their decision-making. One respondent said, "The topic usually drives me to choose what I attend, not the formats." Another respondent demonstrated similar feelings: "When attending conferences, I choose what formats to attend purely based on my schedule and what interests me. It's more about the topic than the style of presentation." Athletic trainers within this category commonly articulated that the content of the presentation was more important than the format in which it was presented.

Practical Application. Fewer respondents (14.6%, n = 91 of 623) illustrated practical application as a motivating factor for selecting specific formats. Some ATs discussed their desire to apply what they learned in clinical practice and with their patients as a primary factor in choosing sessions, whereas other ATs also highlighted the importance of closing a gap in their skills. One respondent said, "I look to where I view my

clinical weaknesses [are] at and try to attend sessions that will help my practice and ultimately my patients." Many respondents within this category discussed how their patients (population) and clinical practice (setting) were very important in their decision-making. Their overall goal was to address gaps in practice that were either perceived weaknesses or common conditions/areas of practice as an AT. Another respondent said:

[I choose a CE session on] how applicable the information will be in the immediate future. I want to take away something that I can use NOW as opposed to something that will take 1–2 years to implement.

This sentiment was common within this category; ATs shared the importance of being able to learn something during a CE session and apply it immediately in their clinical practice.

Up-to-Date. Other respondents wanted to remain up-to-date on new techniques and best practices in the field. Some respondents discussed how they wanted to gather new information that they might not have learned previously, whereas others focused on current best-practice recommendations. This category was the least common, with only 10.8% (n = 67 of 623) of respondents discussing staying up-to-date as a primary motivator. One respondent said,

[I choose CE sessions to] hear about new research, learn and practice new techniques, hear what others are doing and get their opinions on current topics, and discuss patient outcomes.

Another AT said, "[CE is] an opportunity to increase my knowledge base, learn new skills, and keep up-to-date on current practices." Athletic trainers also shared how CE is a more convenient way to stay up-to-date, because the presenter(s) put the time into finding the evidence to share with attendees during the session.

Domains of Athletic Training Practice Selection Influencers

Athletic trainers preferred to learn about all domains of athletic training practice, with the highest number of ATs selecting examination, assessment, and diagnosis (80.7%, n = 619 of 767). The only domain ATs widely determined that they did not prefer to learn about was health care administration and professional responsibility (41.9%, n = 321 of 767). All domains that were selected as preferred or not preferred can be seen in Table 6. After the respondents selected which domains they preferred to learn about, they were asked to rank those domains from most to least preferred. This showed which domains ATs were most interested in when compared with each other. Athletic trainers ranked the domains as their first preference with the following rates of selection: examination, assessment, and diagnosis (24.3%, n = 186 of 619), therapeutic intervention (20.7%, n =

159 of 580), injury/illness prevention and wellness promotion (19.9%, n = 153 of 615), immediate and emergency care (14.0%, n = 107 of 566), and health care administration and professional responsibility (9.4%, 72 of 346). Athletic trainers were asked about their motivations for selecting sessions within their preferred domains of athletic training practice, and we found 4 main categories: (1) practical application, (2) topic or content of interest, (3) remaining up-to-date, and (4) perceived needs.

Practical Application. The main influencer for ATs to attend sessions in their preferred domains was practical application (53.4%, n = 337 of 631). In this category, respondents discussed how a domain was more closely related to their primary area of clinical practice, such that seeking CE in that area would allow them to apply the content more readily. One AT chose sessions based on

Current work setting. There is a lack of ATC CEUs based in the wellness and health promotion setting. Not all ATs are focused on ACLs [anterior cruciate ligaments], lateral ankle sprains, rotator cuff, lumbosacral injuries.

Although some ATs were looking for CE sessions related to a specific condition their patients might present with, other ATs were searching for sessions relative to their work setting. Another respondent said:

[I want] to give patients the knowledge of their choices and the education/understanding of what is happening with their injury and the why and how it happened. Also, to give them [patients] treatment options that best fit their needs while giving them the knowledge of their options.

This response shows that ATs want to be able to provide better patient education and treatment options. They are looking for more patient-centered CE options, and this would seem to be a focus of their professional development. The most common responses found were those that generally addressed that respondents would attend sessions based on what they saw in their clinical practice. One AT said, “The sessions that directly impact the majority of my clinical practice are the ones I would prefer to attend.” These types of responses were the most common overall.

Topic or Content of Interest. After the practical application category, there was a drop-off on the number of respondents displaying the others. Topic or content of interest was the next most common category, with 23.6% (n = 149 of 631) discussing this as a motivating factor for their session selection related to their preferred domains of athletic training practice. Within this category, respondents focused on the general information presented as a topic they wanted to learn more about or an area of interest. One respondent said, “[I] enjoy the learning aspect of assessing injuries and to see if I am correct in my assessment.” Many respondents highlighted a specific content area that they particularly enjoyed learning about as the primary factor in selecting a session. Another stated, “I firmly believe our profession needs to emphasize prevention, which is why I chose the particular sessions in the order given.” This AT was interested in prevention strategies and selected sessions that would help them become more knowledgeable in that domain.

Up-to-Date. A similar number (22.2%, n = 140 of 631) of ATs also discussed how remaining up-to-date was important for their domain preferences. One respondent said, “If there

[are] new emerging practices on the subject.” This AT highlighted the desire to learn about new information within the selected domain of athletic training practice. Another respondent highlighted the necessity to stay up-to-date with best practices:

I believe that we, as athletic trainers, need to start operating more according to a medical model, meaning we need to focus on health care administration and taking back the power from our athletic directors, coaches, etc, for those decisions. I think it's important for us to be a voice for our athletes without fear of repercussions for doing our job. I also think emergency medicine is something we can't get enough of because it will ultimately save lives. Things change rapidly in the medical community and we should stay ahead of that like other medical professionals.

Not only did this respondent highlight the importance of remaining up-to-date with specific techniques, the respondent also addressed the need to be up-to-date in the direction of the profession in terms of health care administration and professional responsibility through the advocacy of patients and moving toward an independent medical model.

Perceived Needs. Perceived needs (20.1%, n = 127 of 631) were the least common influencer of the respondent's choices. Respondents within this category commonly discussed their desire to address gaps in their practice or seek CE to promote self-development as a leader and/or clinician. One respondent said, “I feel you can never be too educated in these areas. They are of the utmost importance to our career and help us progress in such a way that promotes self-development.” This AT preferred to learn about all domains, but ranked them as follows from most to least preferred: therapeutic intervention, health care administration and professional responsibility, immediate and emergency care, injury/illness prevention and wellness promotion, and examination, assessment, and diagnosis. This respondent demonstrated that perceived needs influenced the selection of CE sessions. The focus on self-development suggests the respondent was actively trying to fill practice gaps with CE.

Another AT said, “I have not been a professional for very long, so they are areas where I think I need more education.” This response shows the AT identified areas of improvement and would select sessions based on individual needs. This younger AT also preferred to learn about all domains of athletic training practice but ranked them differently from the previous respondent. This AT's most preferred domain was examination, assessment, and diagnosis, followed in descending order by immediate and emergency care, therapeutic intervention, injury/illness prevention and wellness promotion, and health care administration and professional responsibility.

Sources of Session Conflicts

Athletic trainers believed that the ideal number of concurrent sessions to be 3 ± 2 (range, 1–5). When asked how they determined their ideal number of concurrent sessions, ATs demonstrated many causes of session conflict. The session conflict domain categories determined were (1) variety, (2) indecision, (3) fear of missing out, and that (4) it depends.

Variety. A total of 367 (54.6%, N = 672) ATs cited a wide variety of sessions as being the main reason for their ideal

number of sessions. Many ATs highlighted the importance of having a good variety of sessions so that attendees could choose something that fit their selection choices. One respondent said:

At the sessions that I've attended, they had 2–3 sessions going at the same time. This seemed to work well, as it gave different groups a chance to listen to topics that are pertinent to their specific field of practice.

This clearly shows that there needs to be a good variety of sessions to choose from so that ATs from different backgrounds and settings have an opportunity to find a session that is pertinent to their situation. Another AT said, “It gives people a wide variety of options to choose from.” This was a common response and showed that the AT believed the ideal number of concurrent sessions provided would allow for many areas of interest to be addressed.

Indecision. Athletic trainers also said that they had feelings of indecision (26.8%, n = 180 of 672) as a factor in their selection of the ideal number of concurrent sessions. Some respondents discussed their difficulty in selecting sessions, and others shared feelings of indecisiveness or being overwhelmed with choices. One respondent thought the ideal number of concurrent sessions was 3 and said:

It gives a good option for people. When there are much more than that, it is a challenge to pick which one you want to attend. I stopped attending nationals [NATA symposium] because I would often have all the sessions I wanted to go to occurring at the same time, and other times when I wasn't interested in any of them.

Another stated:

Simultaneous events allow people to choose the topic that interests them most without overwhelming them with choices, [which] likely ends up with them picking [what] they want to attend more.

These responses demonstrate that ATs have feelings of indecisiveness when there are too many sessions to select from. Overall, they have difficulty selecting sessions when there are too many options that are of interest to them. ATs also discussed how they wanted to have a variety of options, but too many options can be overwhelming for learners. One AT said: “I feel as if there are too many choices, people get overwhelmed and have difficulty deciding what to attend.”

Fear of Missing Out. The fear of missing out on opportunities (27.1%, n = 182 of 672) was another common category found. Fear of missing out occurs when an individual feels apprehensive or anxious that someone else might engage in a rewarding activity the individual is not a part of. In the context of CE, respondents commonly discussed how they had a difficult time choosing among sessions because they were concerned that the session they chose not to go to might have really good information they would miss. One AT discussed such feelings:

Often when there are more than 2 sessions running concurrently, the course attendee has to miss out on classes which they would have attended if they were not in competition with other classes that might be vital for recertification such as EBP [evidence-based practice] or ethics.

This respondent showed that some people may feel like they are missing out on opportunities because they must attend certain sessions to meet the evidence-based practice CEU requirement. The respondent believed that limiting the number of concurrent sessions would be beneficial so that attendees would not miss out on other sessions they would enjoy. Another respondent used an interesting analogy to demonstrate these feelings:

If I'm going to pay, I'm not interested in paying to not get to see everything. It'd be like going to an amusement park but only getting to hit 2–3 rides. I paid for all so want to see all. But it's not a perfect world so 2–3 would be tolerable at a time just so there [are] some options, but not too many.

This respondent wanted to see as many sessions as possible, in order not to miss any vital information. The respondent did understand that it might be difficult to only have one session available at a time and thought that having 2 or 3 would be acceptable.

It Depends. The last and least common reason for the respondents to select a specific number of concurrent sessions was that “it depends.” A total of 59 ATs (8.8%) discussed how the ideal number of concurrent sessions would depend on a variety of factors, such as the number of attendees, the available space of the venue, and the needs of the attendees. One respondent said:

[The total number of concurrent sessions] ideally depends on the number of attendants at the conference, because you don't want people turned away during a session because of capacity, so you have to have enough sessions to accommodate all attendees.

Overall, respondents determined that 3 ± 2 concurrent sessions would be ideal, but they also understood that different multi-session conferences have different needs depending on the number of attendees and the available facilities. Another respondent said:

Depending on the number of people attending, it [the number of concurrent sessions] should just be one. But for large groups (NATA, NSCA [National Strength and Conditioning Association]) it's necessary to have many options, as the settings for attendees is vast.

This respondent believed that the number of sessions depends on the size of the conference and that at larger conferences there must be more concurrent sessions to accommodate the wide variety of settings that ATs are employed in. Both responses demonstrated that the number of concurrent sessions was partially dependent on a variety of factors.

Session Prioritization

Athletic trainers were asked whether their selection behaviors changed depending on the number of concurrent sessions available. Nearly half of the respondents (49.7%, n = 381 of 671) said that this was true of them. When asked to detail why their session selection behaviors changed, they indicated the following were ways to prioritize sessions: (1) content or topic of interest, (2) practical application, (3) perceived needs, or (4) session format.

Topic or Content of Interest. When scheduling conflicts arose, ATs prioritized their session selections based on interest

in the topic or content (31.4%, n = 211 of 671). Responses were placed in this category when respondents clearly articulated choosing one session over another because the topic or content was of interest to them. One respondent stated:

I tend to go to sessions that are more in line with my interests and strengths if there are too many options. When there are limited options, I explore courses that are more necessary for my career or more in line with my weaknesses.

This AT demonstrated that when a decision was needed, they selected a session that aligned best with their interests. As the number of sessions increased, the AT's curiosity in options that would expand on their weaknesses diminished. This may be linked to the overwhelming feelings learners have when there are too many sessions to select from. Another respondent said, "I want to utilize my education best during these sessions; therefore, my selection behavior will be highly motivated by the topics that are going on at the same time." This AT revealed a motivation to select sessions they were most interested in when faced with competing sessions that were of interest.

Practical Application. Some respondents also chose based on how the content may impact their clinical practice (14.5%, n = 97 of 671). In this category, ATs highlighted how their decision-making was driven by which session was the most applicable to their clinical practice. One AT said:

I have to plan out what I want to learn and how applicable each session is. I will look at the whole program to figure out if there are other sessions similar to ones in the concurrent sessions to prioritize them to try and get the most out for each talk. For example: concurrent session on disordered eating and MTSS [medial tibial stress syndrome] prevention; later in the day there is a talk on preventing running injuries. I will most likely go to the disordered eating talk instead of the MTSS talk due to getting some MTSS prevention information in the running injuries talk later.

This suggests that some clinicians are looking for answers to specific clinical questions while finding ways to prioritize based on the availability of similar content at a different time during the multi-session conference. Another AT said, "These are the domains that I utilize the most day to day with the greatest benefit for my patients and university." This AT prioritized the sessions based on which would be most applicable to their clinical practice overall and the greatest benefit for their work setting.

Perceived Needs. Only 9.8% (n = 66 of 671) of ATs surveyed selected sessions based on their perceived needs when session conflicts occurred. One respondent had a comprehensive outlook on selecting sessions when they were in conflict:

When there are multiple sessions offered concurrently, I will select based on a preidentified theme based on my educational needs. For example, if I need to bolster my rehabilitation skills/knowledge, I will purposely identify sessions that meet said purpose. Additionally, some conferences provide educational material for all sessions, so I know if I don't make it to a session that conflicts with one I am attending, I can look it up later. For NATA conventions, I usually I go into the handout section and download a bunch of material to reference. Though I admit I have to do a better job with

reviewing the information, I have gone back to reference material for clinical practice or classroom instruction.

This respondent reflected on perceived needs and then selected sessions that would best fill those gaps in their clinical practice. This AT also prioritized based on which sessions would be most beneficial to go to in person, because materials could be found online. Another respondent took a similar approach, saying, "My question to myself is, 'Which topic contributes to my knowledge more?' Then I pick." This AT also used perceived needs to drive decision-making for session selection.

Format. The least common way that ATs prioritize sessions is by format type. Only 3.1% (n = 21 of 671) of respondents displayed feelings that were included in this category. There was a large variance of reasoning for format types to be a prioritization factor: some ATs discussed choosing formats that were the most beneficial to them, that they enjoyed the most, or that were the easiest format for them to learn from. One AT said, "I might choose a smaller, hands-on session over a large lecture, especially for NATA because I can get the lecture notes online. Can't replace the hands-on learning." This demonstrates a unique way to problem solve: one can maximize one's time by using hands-on sessions to the best of one's ability and then find lecture notes online. Another said, "I may choose a hands-on seminar in a 'less desired' domain versus a panel or lecture in a 'more desired' domain. Engagement is a pivotal deciding point for me." This shows the importance of incorporating interactive sessions for learners to select from. Some ATs want to be engaged with the materials, even if the domain is not one they are most interested in.

DISCUSSION

Continuing education research in athletic training has established that ATs have positive views on the CE process and that it has value,^{6,7} but that there are many barriers and deterrents to effective use of CE.^{6-8,18} Armstrong and Weidner⁹ found that many ATs attend multi-session conferences at different organizational levels as a means to meet CEU requirements. Considering the current research on CE in athletic training,^{6-10,18} the purpose of this study was to explore ATs' planning practices at multi-session conferences regarding preferred format types, preferred domains of athletic training practice, and the ideal number of concurrent sessions and their associated rationales, as this format of CEU acquisition is common.⁸ This study attempts to help guide planning practices for both multi-session conference planning committees and individual learners.

Our results can be contextualized through andragogy, which asserts that experiential and immediately applicable, problem-centered activities are imperative principles for effective adult learning sessions.^{14,22} Andragogic formats include case discussions, role-play, and hands-on practice, in which learners are actively participating in the learning experience.²³ Formats that are interactive and collaborative do not traditionally include didactic sessions such as lectures or other formats in which the learner takes a passive role. The application of andragogic instructional strategies could be very effective for addressing the established barriers to practical implementation of new knowledge and skills in athletic training.

In addition to thoughtful delivery, widespread quality improvement strategies could enhance CE practices. In addition to the learner feedback that is commonly collected by approved providers, other quality improvement strategies, including pre-session and post-session knowledge assessments and longitudinal studies regarding the application of learned skills into practice, should be integrated. This would allow the learners to be more active in their education, and there would then be an expectation of changes to practice as a result of engaging with the learning. Although learners have preferences, and these should be included in the planning of CE sessions, session planning should include formats and assessments that are effective for clinical practice behavior changes.

Session Format Preferences and Motivators

We found that ATs preferred workshops, large-group lectures, and small-group lectures. Hands-on workshops allow for practice and have been known to be effective for overall clinical behavior change. However, lectures are generally less effective means for changes in clinical practice, as they are not traditionally known for being experiential or problem centered, but they are good for introducing ideas and disseminating new knowledge.^{24,25} Interactive and collaborative session types are shown to have a greater impact on clinical behavior change than didactic approaches.^{15,16,23} Even in Web-based platforms, which are intended to make learning more accessible, synchronous learning activities resulted in greater increases in confidence, more satisfaction, and better outcomes in post-session knowledge assessments when compared with their asynchronous counterparts.²⁶ Experiential and collaborative sessions are more impactful on clinical practices has been shown in athletic training CE research, but these recommendations are slow to catch on with CE session planners.⁶⁻⁹ Generally speaking, large, multi-session conferences are unable to offer formats that support interactive and collaborative sessions.

Respondents seemed to strongly indicate a desire for hands-on learning, both in their stated session preferences and throughout their open-ended responses. However, they also indicated a preference for large-group lectures, often a more passive experience. Andragogy suggests interactive and collaborative learning is most effective for adult learning. To optimize CE opportunities for learners and increase the likelihood of knowledge and skill translation into practice, we need to make sure learners are actively engaged in their education, which can be achieved in any of the formats described, including (and sometimes more easily) in formats that were least preferred. Engagement theory postulates that learners who find learning activities meaningful and have a high level of interest in the activity learn more effectively, retain the information better, and are able to transfer the learning outside the classroom. Educating CE developers, educators/presenters, and learners on how these format types can be more effective for engagement can ensure that patients may directly benefit from CE. The least commonly preferred formats in our study were small-group discussions, large-group discussions, and poster presentations. All 3 of these formats inherently include andragogic principles¹⁴ through learner engagement.

When developing CE opportunities for ATs at multi-session conferences, it may be helpful to use learning theories to guide

delivery and ensure learning outcomes are met. Adult learners want to be involved in identifying their educational needs, and courses should be applicable to life situations, problem centered, and experiential.^{13,14} Although lectures can be passive, active learning strategies might include case-based scenarios, breakout sessions, critical self-reflection, and journaling. These potential activities align with cognitivist and constructivist thinking.^{12,13} Clinical workshops, specifically including hands-on instruction, are behaviorist in nature and were preferred by respondents. These sessions are difficult to plan for large multi-session conferences; however, demonstration, discussion, role-play, and reflection can complement the behaviorism with cognitivist and constructivist theories for a quality overall educational experience.

Preferred Domains and Influencers

Athletic trainers seemed most interested in domains of athletic training practice that were applicable to their clinical practice. Some ranked examination, assessment, and diagnosis or injury/illness prevention and wellness promotion highly, which may be because those domains are the ones they felt they used most in their clinical practice, whereas those who least preferred to learn about health care administration and professional responsibility may not have believed they used this domain as much in their daily practice. Taking into account content that is applicable to clinical practice should be a point of emphasis in planning CE opportunities, as it aligns well with previous research²³⁻²⁷ and adult learning theories.^{14,22,27-30} Allowing ATs to have input on their CE opportunities is impactful for adult learners, as it increases individual buy-in on the content. Learner input also ensures that the sessions are applicable for the audience attending the conference.

Another outcome of this study was that many ATs selected health care administration and professional responsibility as the least preferred domain to learn about. Modifying how ATs understand health care administration, through diffusion of innovation theory,³⁰ may spark increased buy-in from the community of clinicians and help drive changes in clinical outcomes and practice. As the importance and understanding of the administrative role for common clinicians increases, it will allow them to implement more changes at the systems level. Clinicians will be able to understand how to implement new ideas and skills learned at multi-session conferences throughout their workplace, and not just in their own clinical practice. One way we could change how clinicians interact with the health care administration and professional responsibility domain would be to include facets of it in sessions that are focused on the other, more preferred domains. Much like activities that help learners put policy into practice, this would include addressing the system-level barriers for implementation, as described by Edler and Eberman.¹⁸

Session Conflict Resolution Strategies

Some ATs had difficulty navigating conferences with many concurrent sessions. We recommend that 3 to 5 concurrent sessions be planned, if possible, as this aligns with the findings of this study. We found that nearly half of respondents reported that their session selection behaviors changed depending on the number of concurrent sessions available. These are novel findings in the allied health professions. We

also found that the ideal number of concurrent sessions selected by ATs was driven by the need for a good variety of sessions to choose from, which also limited feelings of missing out on important information or indecisiveness. Some ATs also described that their choices depended on many factors, such as space available, size of the conference, and whether it was a local, regional, or national multi-session conference. Regarding session prioritization, ATs mainly selected sessions based on how interested they were in the topics and content of the sessions available, but as concurrent session options increased, their curiosity in domains where they perceived knowledge weaknesses decreased, creating an inverse relationship, as described by the respondents. They also selected sessions based on their applicability to their clinical practice and perceived needs. Some also preferred certain format types, such as labs or hands-on workshops. Edler Nye and Eberman¹⁸ identified similar trends in how ATs select CE sessions.

Only 9.8% of the ATs surveyed used their perceived needs to resolve session conflicts. Although perceived knowledge has its limitations, this could be the first metacognitive self-assessment to guide CE. Disparities between perceived and actual knowledge can be found throughout nursing,^{31,32} in radiology,¹⁷ and in athletic training.^{1,10,33} Within athletic training, researchers have found ATs have a higher perceived knowledge relative to their actual knowledge.^{1,10,33} The Board of Certification does provide a Professional Development Needs Assessment Tool, but using only perceived knowledge to guide CE selection poses a danger to patients because ATs may seek new knowledge only in areas in which they perceive a knowledge gap, not in areas of actual need. Adult learners may not be ready to learn until they see a need for new knowledge.^{13,14}

Feedback relative to the differences between perceived and actual knowledge can be received in a variety of ways, such as low-stakes knowledge assessment; analysis of patient care through chart reviews, simulation, and feedback from peers; and overseeing physicians through direct observation. The use of a knowledge assessment has been shown to increase the likelihood of ATs' pursuing CE where a knowledge deficit has been identified.¹⁰ Feedback may help learners to better prioritize and resolve their inner conflict in selecting CE, especially when faced with feelings of being overwhelmed by their choices at multi-session conferences.

To help reduce the feelings of missing out on important content and curb feelings of indecision, more learner-centered navigational tools should be developed to aid in learners' ability to understand what sessions would be beneficial to them. Another option for larger multi-session conferences would also include grouping session content together to help reduce feelings of indecision. Other considerations to help shift the current model of CE would be to properly use evidence-based practice, specifically comparing patient outcomes to the best research on the given pathology and highlighting gaps in practice as well. Tracking patient outcomes and comparing with best practices can help inform CE selection behaviors.

LIMITATIONS AND FUTURE RESEARCH

Coding of qualitative responses has a natural bias because of subjective interpretation of the responses. However, this bias was limited by using multiple-analyst triangulation and external auditing. Future research should focus on determining the effectiveness of current knowledge gap assessment techniques and how clinicians determine their areas for improvement. Long-term effects of CE in athletic training also need to be studied. These studies could explore the effectiveness of format types and skill acquisition, new knowledge and skill application to practice, or how different forms of CE are impacting the landscape of athletic training education.

CONCLUSIONS

The purpose of CE in the health care professions is to maintain best practices and acquire advanced clinical skills with the intention to advance the respective profession through the application of knowledge and innovation into clinical practice.¹⁻⁵ This study attempted to determine how ATs planned for multi-session conferences, considering many ATs use this medium to obtain CEUs.⁹ Many ATs preferred either sessions that gave them direct skills or knowledge that could be applied to their clinical practice, such as hands-on clinical workshops, or traditional didactic sessions, such as lectures. Ultimately, the ATs' choices were heavily dependent on the content and topics available, with some prioritizing sessions that directly answered specific clinical questions developed from their practice. Another factor that seemed to affect decision-making regarding CE sessions was the number of sessions available at a given time. When many sessions were available, ATs commonly experienced feelings of indecision and feared missing out on impactful topics, which in some cases resulted in ATs choosing sessions that may not have challenged their current skills or knowledge. The ATs described that as the number of concurrent sessions increased, their curiosity in domains they were weak in decreased. Athletic trainers commonly preferred format types that aligned well with their style of learning to optimize the uptake of information, while selecting domains of athletic training practice they used most in their current practice.

Athletic training CE is an area that can be further optimized to produce more significant clinical behavior change and promote positive patient outcomes. Multi-session conference planning committees should consider the preferences and feelings demonstrated throughout this study by ATs, while also following effective adult learning theories^{14,30} to help aid in overall changes in clinical practice behaviors. Sessions available to ATs should provide applicable skills relevant to each of the respective domains of athletic training practice that ATs are interested in. The format of CE sessions should also be optimized for effective delivery of the content, such as new knowledge in lecture format, but advanced skills or reflective practices in hands-on labs or discussion formats, respectively. Practicing clinicians should also take a more active role in their continued education by using the resources they have to provide feedback on their practice, helping guide CE session selection behaviors.

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