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Factors Influencing Athletic Trainers' Continuing Education Motivators And Application

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ABSTRACT

This study examined athletic trainers' perceptions of continuing education, their motivators for choosing continuing education, and how they choose to implement knowledge and skills gained from continuing education sessions. Audio-recorded interviews were completed using a semi-structured interview consisting of 8 questions. Fourteen certified athletic trainers in good standing with the Board of Certification participated in the interviews. Four themes emerged from the data: 1) value of continuing education, 2) clinician centered continuing education selection, 3) improvements for continuing education, and 4) implementation of continuing education. Clinician centered continuing education selection and implementation of continuing education each contained 3 and 4 subthemes, respectively. Athletic trainers believe continuing education is valuable to help them maintain evidence-based practice, advance their knowledge, and provide the most up-to-date care to their patients. When choosing continuing education sessions, athletic trainers focus on their perceived needs, areas of interest, patient population, and current clinical setting. Time, cost and travel distance to a conference are all barriers to engaging in continuing education activities. Participants suggested more hands-on and interactive continuing education sessions, along with a centralized location for resources and a handout with key points from each session. Lastly, participants chose to implement knowledge and skills from continuing education sessions based on their confidence in their knowledge and abilities. They also identified overall positive patient responses to the new skills they implemented; however, these assessments were predominantly subjective in nature.

The data collected in this study identified key motivators and barriers to participation in continuing education, along with methods of implementing continuing education knowledge and skills into clinical practice.

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CHAPTER 1

INTRODUCTION

Healthcare professionals must be equipped with the knowledge and skills to provide patients the best possible care. Continuing education (CE) is an ideal method to inform and update clinicians on advances in research and skills beyond that of entry-level education. Previous research suggests that clinicians also need CE for maintenance and often times to refresh their knowledge because knowledge and skill degradation occur 6-12 months after a CE session (Duran et al., 2008; Einspruch, Lynch, Aufderheide, Nichol, & Becker, 2007; Fischer et al., 2012; Gombeski, Effron, Ramirez, & Moore, 1982; Hamilton, 2005; Kopacek, Dopp, Dopp, Vardeny, & Sims, 2010; Mahony, Griffiths, Larsen, & Powell, 2008; Yang et al., 2012). Within the athletic training profession, all clinicians are expected, at minimum, to maintain entry-level knowledge, which is defined by the Board of Certification's (BOC) Role Delineation Study (Board of Certification, 2015).

Athletic trainers may search for formal or informal means of CE via conferences, journal articles, textbooks, or other sources of information. Ideally, they will choose a method of formal CE, where they can earn CE units and be taught by an expert on the subject. Previous research suggests that athletic trainers perceived formal CE to increase their knowledge (Armstrong & Weidner, 2011). Additionally, athletic trainers preferred clinical workshops or professional conferences/seminars for their formal CE opportunities (Armstrong & Weidner, 2011; Eberman

& Edler, 2017). Eberman and Edler (2017), Armstrong and Weidner (2011), Walker, Pitney, Lauber, and Berry (2008), and Hughes (2005) have examined barriers to CE in athletic trainers; each study reported cost of attendance and travel distance to the CE event as barriers to participation. Hughes (2005) also cited a lack of course relevancy as a barrier to CE. Athletic trainers with more experience valued the content of the courses as more important than those with less experience. Hughes (2005) suggested this finding aligns with Knowles' model of andragogy and the shift toward self-directed learning as one matures.

Research demonstrates an increase in knowledge following a CE session (Bell, Pestka, & Forsyth, 2007; Cheng, Hsu, Yang, Yeh, & Shu, 2007; Duran et al., 2008; Gerstein et al., 1999; Lyons & Kasker, 2012; Markert, O'Neill, & Bhatia, 2003; McCluskey & Lovarini, 2005; Welch, Van Lunen, & Hankemeier, 2014). Research indicates that patient outcomes are improved when a clinician attends a CE session (Cabana et al., 2006; Davis, Thomson, Oxman, & Haynes, 1995a). However, some researchers have questioned how many clinicians implement knowledge and skills into clinical practice (McCluskey & Lovarini, 2005; Welch, Van Lunen, Hankemeier, et al., 2014). Therefore, the purpose of this study was to examine how athletic trainers chose to implement or not implement knowledge and/or skills following a CE session into their clinical practice. The secondary aim of this study was to explore athletic trainers' motivators for CE, which will help us understand the underlying decision-making process when they choose CE opportunities and specific sessions. This understanding is important to understand because it may have an impact on how and why they choose to implement what they learned into their clinical practice.

Statement of the Problem

CE is a requirement for credential maintenance within athletic training and many other healthcare professions. Previous research indicates improvement in patients' clinical outcomes when clinicians attend a CE session (Cabana et al., 2006; Clark et al., 1998; Davis et al., 1995a; Davis, Thomson, Oxman, & Haynes, 1995b; Forsetlund et al., 2009). However, little research examines how often these clinicians implement the knowledge and skills from the session into their clinical practice, while many clinicians do not use the skills (McCluskey & Lovarini, 2005). Furthermore, if clinicians do not implement the content from CE sessions, we need to understand why they are not, so measures can be taken to combat the issues.

Statement of the Purpose

The purpose of this study was to examine how athletic trainers chose to implement or not implement knowledge and/or skills following a CE session into their clinical practice. Additionally, I also aimed to explore athletic trainers' motivators for CE, which help us understand the underlying decision-making process when they chose CE opportunities and specific sessions.

Limitations of the Study

Participants self-selected CE sessions, which may impact how they implemented the content into clinical practice. However, this replicates the current CE structure within athletic training and other healthcare professions. Natural growth may occur, where the clinicians decide to implement these skills or knowledge into clinical practice because they are growing as practitioners and learning the importance of these skills. This growth may occur even more rapidly for athletic trainers who are transitioning into clinical practice (i.e. recent graduates), and

while there is no research to support this assumption, anecdotally it is known that new clinicians experience considerable growth during their first 12-months in their new positions.

Operational Definitions

Athletic Trainer – An athletic trainer is a "highly qualified, multi-skilled health care professional who collaborates with physicians to provide preventative services, emergency care, clinical diagnosis, therapeutic interventions and rehabilitation of injuries and medical conditions" (National Athletic Trainers' Association, 2011a).

Competency-based Education – Competency-based education provides a set of skills, clinical abilities, and knowledge that must be mastered by students, through the evaluation of competencies and proficiencies (National Athletic Trainers' Association, 2011b).

Continued Competence – Continued competence is the ability of a clinician to integrate knowledge, skills, and judgment into clinical practice in a safe and ethical manner.

Continuing Education – Continuing Education (CE) is intended to promote continued competence, development of current knowledge and skills and enhance professional skills and judgment beyond the levels required for entry-level practice (Board of Certification, 2015a). Continuing education is required for credential maintenance within athletic training.

CHAPTER 2

LITERATURE REVIEW

Education in Athletic Training

History of Athletic Training Education

Education in athletic training began in the 1950s with the initial development of the curriculum model, which included two routes: secondary school teaching certification or completing prerequisites for PT school (Delforge & Behnke, 1999). The purpose of obtaining a secondary school teaching credential was to increase the likelihood of employment in a secondary school by preparing the student as an athletic trainer and high school teacher, primarily for health or physical education. The coursework was very similar to a physical education major, with the exception of an advanced athletic training course and the required laboratory practice in athletic training. At this point the curriculum was easily housed within other disciplines such as physical education or physical therapy.

In the 1960s, few institutions moved toward the standard curriculum, which was accepted by the National Athletic Trainers' Association (NATA) Board of Directors in 1959. The Subcommittee on Professional Education, which has since evolved into the NATA Professional Education Committee, was formed in 1968 when it became clear that school administrators were unaware of the proposed curriculum along with the evaluation and approval process through the NATA. The Subcommittee on Professional Education was responsible for completing the

evaluation and approval processes when institutions submitted their curricula for review. However, it was 10 years before the NATA approved the first undergraduate athletic training programs. Four institutions (Mankato State University, Indiana State University, Lamar University and the University of New Mexico) were approved through the NATA curriculum evaluation and approval process in 1969 (Delforge & Behnke, 1999). In 1972, two graduate athletic training programs were recognized as NATA approved programs (Indiana State University and University of Arizona).

Following the move to NATA approved programs, the NATA Certification Committee began developing routes to earning the certified athletic trainer (ATC) credential. In 1970, the first certification examination was administered. Subsequently, four routes to certification became available: (1) graduation from an NATA-approved athletic training program (undergraduate or graduate), (2) completion of an apprenticeship program, (3) graduation from a school of physical therapy, and (4) special consideration route, which required a minimum of five years as an actively engaged athletic trainer (Delforge & Behnke, 1999). Throughout the 1970s, there was large growth in the number of accredited programs and decreased emphasis on using athletic training as a means to meet physical therapy school prerequisites. More emphasis was placed on athletic training specific concentrations, which in turn expanded the athletic training curricula and clinical education expectations. Athletic trainers also began to realize that the secondary-school teaching credential limited employment opportunities, rather than enhancing them as originally suspected, which led to a decreased emphasis on obtaining the teaching credential as part of the undergraduate education.

As athletic training education proliferated, it became clear that educational objectives were needed to help standardize education programs. In the 1970s, the NATA Professional

Education Committee (PEC) developed a list of behavioral objectives that identified a specialized body of knowledge for students in athletic training. This document became the foundation for the competencies in athletic training, which were developed by the PEC in 1983 (Delforge & Behnke, 1999). With the addition of educational competencies and further growth, the NATA Board of Directors voted to require an athletic training major by 1990, rather than allow students to graduate with another major with an emphasis in athletic training. The NATA PEC worked through the 1980s to develop the components of an athletic training major, prior to the vote. Changes from the initial curriculum model included clinical experiences under the supervision of an ATC and subject matter specific content rather than specified courses.

The next milestone in athletic training took place in June of 1990 when the American Medical Association (AMA) formally recognized athletic training as an allied health profession (National Athletic Trainers' Association, 1990). Following this change it became clear that an accreditation process was needed to standardize further athletic training education programs to ensure students were receiving similar education. The Joint Review Committee on Educational Programs in Athletic Training was formed in 1990 with the purpose of developing accreditation standards for entry-level programs. In 1996, the NATA PEC delineated the difference between professional and post-professional education because there were some variations in graduate athletic training programs across the country. Graduate athletic training education required programs to offer “advanced” learning experiences beyond those required for undergraduate programs, differentiating professional and post-professional education (Delforge & Behnke, 1999). Following this decision, the National Athletic Trainers Association Board of Certification (NATA) discontinued the completion of an NATA graduate program as a route to certification

unless institutions maintained the entry-level degree at the graduate level, with a clear distinction between entry-level and post-professional education.

The next major policy change occurred in 1997 when the NATABOC required that students must complete an accredited, entry-level degree to be eligible for the certification exam, which eliminated the internship route to certification (Delforge & Behnke, 1999). This change officially took place in 2004 and the certification exam became the only route to earn the ATC credential. The educational task force, which made the certification exam recommendation, also recommended that accredited graduate program standards be developed for the post-professional degree. Athletic training education programs continued to flourish throughout the 1990s and 2000s. The most recent policy change occurred in May of 2015 when the Athletic Training Strategic Alliance, which includes the NATA, BOC, the Commission on Accreditation of Athletic Training Education (CAATE), and the NATA Research & Education Foundation (NATA-REF) announced that the entry-level degree would change from the undergraduate to the graduate level (Athletic Training Strategic Alliance, 2015). The CAATE has set forth a standard that states' "accredited programs cannot admit, enroll, or matriculate students into an undergraduate professional program after the fall of 2022" (Commission on Accreditation of Athletic Training Education, 2015).

Competency-based Education

Competency-based education (CBE) became the foundation of athletic training education following the first NATABOC role delineation study in 1982 (Weidner & Henning, 2002). CBE provides a set of skills, clinical abilities, and knowledge that must be mastered by students, through the evaluation of competencies and proficiencies (National Athletic Trainers' Association, 2011b). Students are engaged in clinical education, which is a structured and

organized environment to create learning opportunities (Weidner & Henning, 2002). Clinical education can take place in a variety of settings such as the classroom, laboratory, and clinical setting, where the student is provided formal instruction and assessment (Commission on Accreditation of Athletic Training Education, 2012).

Assessment is an important component of CBE because it allows for early recognition of deficiencies and remedial actions (Holmboe, Sherbino, Long, Swing, & Frank, 2010). Holmboe et al. (2010) described six points preceptors should use for assessment: 1) assessment should be continuous and frequent, 2) assessment must be criterion-based, 3) assessment must occur during work-based experiences, 4) assessment tools must meet the minimum quality standards, 5) qualitative assessment should be included, and 6) assessments should be completed by more than one individual and include the students input. Assessment promotes learning over time and allows the students to improve with feedback from their preceptors. Learning over time is important in education because students are provided with multiple learning experiences throughout their educational careers and are able to develop further their skills (Amato, Konin, & Brader, 2002). Students need to be exposed to many experiences as they complete their didactic coursework in order to make connections and further develop their understanding of a particular subject. Learning over time also promotes the translation of skills to practice because students are allowed ample opportunities to demonstrate a skill and perform it repeatedly to improve their performance (Amato et al., 2002). Providing feedback to the student following their performance of the skill each time allows for continual growth and improvement. The NATA educational competencies are written to promote learning over time and should be assessed multiple times to demonstrate student learning.

The NATA PEC developed the educational competencies, following a systematic plan (described below) and with feedback from the BOC and the CAATE (National Athletic Trainers' Association, 2011b). The first step in this process was to solicit feedback on the 4th edition of the competencies. Next, groups of subject-matter experts were tasked with examining the current healthcare system and identifying current best practice in athletic training. The groups of subject-matter experts included practicing athletic trainers, educators, and administrators. Based on the expertise of the subject-matter experts, the NATA PEC created a draft of the 5th edition, which went through multiple rounds of revision. The next step was to post the competencies for open feedback from the profession. That feedback was used to make final revisions prior to the publication and integration of the 5th edition into accredited, athletic training programs.

The CAATE holds programs responsible for teaching and assessing students on all of the competencies throughout their didactic and clinical education (National Athletic Trainers' Association, 2011b). The students then must pass the BOC exam to be credentialed as athletic trainers. The BOC exam is developed from the practical analysis (7th ed.), which identifies essential knowledge and skills for the athletic training profession (Board of Certification, 2015b). The practical analysis describes the five domains of athletic training (injury/illness and wellness protection, clinical evaluation and diagnosis, immediate and emergency care, treatment and rehabilitation, and organizational and professional health and well-being) and the tasks included within each domain (Board of Certification, 2015b). This process is a good method to ensure students meet entry-level knowledge; however, there is currently no measure to assess clinician proficiency, specifically with new content. Typically, new competencies are released every four to seven years and program administrators are responsible for ensuring that students can demonstrate competency and proficiency of all educational competencies before sitting for the

BOC exam. Practicing clinicians are not required to demonstrate proficiency of new skills, yet they are responsible for that content because the educational competencies are a component of the athletic training scope of practice. To avoid litigation, athletic trainers are responsible for maintaining current entry-level knowledge. CE is one mechanism to educate clinicians on new competencies; however the BOC does not currently require clinicians to demonstrate proficiency of new educational competencies to maintain their credential.

Continuing Education

Model in Athletic Training

CE is intended to promote continued competence, development of current knowledge and skills, and enhance professional skills and judgment beyond the levels required for entry-level practice (Board of Certification, 2015a). The BOC is responsible for ensuring that clinicians maintain their credential and complete their continuing education units (CEUs). The BOC requires 50 CEUs every two years, which include 10 evidence-based practice (EBP) CEUs (Board of Certification, 2015a). The addition of the EBP CEUs is intended to promote EBP in clinical practice. The BOC requires applications for approval to award EBP CEUs. The purpose of this process is to ensure that the individuals delivering the sessions are incorporating current evidence and using assessment to determine if clinicians are learning in their sessions.

The BOC offers formal CE (approved for CEU credit), which can be earned by attending clinical symposia, completing online modules, publishing peer-reviewed articles, delivering peer-reviewed presentations, and much more. CE can also be informal (not approved for CEU credit), which include networking, reading professional journals, teaching athletic training classes, and more (Armstrong & Weidner, 2011). Clinicians perceive that clinical skills and

patient care are improved more through informal CE activities, whereas formal activities increase knowledge (Armstrong & Weidner, 2011).

Athletic trainers have a favorable attitude toward CE (Hughes, 2005). They reported attendance of clinical workshops and professional conferences/seminars as their preferred methods of CE (Armstrong & Weidner, 2011). Barriers to CE included travel distance to the event and cost of attendance (Armstrong & Weidner, 2011; Eberman & Edler, 2017; Hughes, 2005; Walker et al., 2008). Additionally, Hughes (2005) found that clinicians with less experience were less concerned about course relevance when choosing a CE session, compared to those with more experience. This finding may be attributed to 1) experienced clinicians' understanding their knowledge gaps, or weaknesses, and seeking CE in those areas; 2) experienced clinicians' choosing topics that are of interest to them; or 3) experienced clinicians' understanding their patients' needs and seeking CE to improve their patient care. Further research should examine this finding in more detail to understand the underlying motivation for CE session selection.

Research in Other Healthcare Professions

The purpose of CE, according to the BOC, is to promote continued competence and develop knowledge and skill (Board of Certification, 2015a). Little research exists in athletic training regarding the development of knowledge and skill following a CE session; however, research exists in other healthcare professions who have a similar CE structure, primarily nurses and physicians. Current research supports the use of CE to improve knowledge (see Table 1).

Table 1

Knowledge Improvement Following Continuing Education Interventions

Author	Healthcare Professional	Assessment Method	P-value
Bell et al. (2007)	Nurses	Written	$p \leq 0.001$
Cheng et al. (2007)	Pediatricians & nurses	Written	$p \leq 0.001$
Lyons & Kasker (2012)	Nurses	Written	$p \leq 0.001$
Duran et al. (2008)	Pediatric residents	Written	$p \leq 0.001$
Gerstein et al. (1999)	Physicians	Written	$p = 0.04$
Markert et al. (2003)	Physicians & nurses	Written	$p \leq 0.001$
McCluskey & Lovarini (2005)	Occupational therapists	Written	$p \leq 0.001$

Table 1 indicates the effectiveness of CE in improving clinicians' knowledge immediately following a session. However, McCluskey and Lovarini (2005) suggested that despite knowledge gains, clinicians are not using the knowledge and skills learned in the CE session. This lack of use is a potential barrier with CE requirements without exploring how and why clinicians are or are not using the information they learned at a CE session. Additional research highlighted time, cost, personnel, and the healthcare system as barriers to implementation of CE into clinical practice (Price, Miller, Rahm, Brace, & Larson, 2010). However, this research focused on physical barriers and did not explore clinician decision-making in implementing CE.

Research on knowledge and skill retention indicates individuals should review content every 6-12 months to prevent degradation (Duran et al., 2008; Einspruch et al., 2007; Fischer et al., 2012; Gombeski et al., 1982; Hamilton, 2005; Mahony et al., 2008; Yang et al., 2012). Yang et al. (2012), completed a systematic review of advanced life support (ALS) knowledge and skill

retention. In all studies they found a decline of either knowledge or skills over time, most studies indicated a decrease in both (Yang et al., 2012). The most significant amount of decay seems to occur over the first 6-12 months of training (Yang et al., 2012). Yang et al. also reported a large amount of variability in the amount of decay that occurred, ranging from 3-7% at six months in one study to 86% at 12 months (Yang et al., 2012). Clinicians must be aware of knowledge and skill loss and be proactive in seeking CE to mitigate decreases over time.

Previous research examining the effect of CE on clinician performance and patient outcomes seems promising. In a systematic review completed by Davis et al. (1995b), 62% of studies showed improvement in physician performance or the healthcare that was provided to the patient. The researchers compiled 99 trials that contained 160 interventions that met the inclusion criteria; of those 160 interventions, only 46 were targeted as changing healthcare outcomes (Davis et al., 1995b). Some of the strategies that were implemented to promote a change in healthcare outcomes included reminders, patient-mediated interventions, outreach visits, opinion leaders, and multifaceted activities. When examining how many studies found a positive change in healthcare outcomes, the researchers found improvement with 48% of the interventions (Davis et al., 1995b), which suggested that about half of the strategies used were not effective. Attending formal CE conferences or activities was not effective without implementing practice-reinforcement strategies. This finding suggests that CE providers should begin implementing strategies to encourage their attendees to use the knowledge and/or skills they learned during the CE sessions in their clinical practice.

Research that specifically examines patient outcomes suggests improvement when the patient's physician attended a CE session. Cabana et al. (2006) compared two groups of physicians regarding their asthma care of patients for one year. Half of the participants attended

a CE session on asthma care, whereas the other group did not. The researchers found that physicians who completed the CE course were more likely to ask about the patients' concerns, encourage physical activity, and set goals for treatment (Cabana et al., 2006). They also found a decrease in days limited to asthma symptoms and decreased emergency room visits. In another study of physicians, Clark et al. (1998) determined that physicians who completed a CE session were more likely to address patients' fears about medications, review written instructions, provide educational messages, write down how to adjust medications when symptoms change, and spend less time with patients. Cervero and Gaines (2015) completed a synthesis of systematic reviews and the evidence suggested that clinician knowledge and patient outcomes were improving; however, clinician knowledge improved much more than patient outcomes. This finding suggests a lack of translation of knowledge gained by the clinician into clinical practice to improve patient outcomes.

Previous research demonstrates that CE sessions may be an effective means at improving clinician knowledge following the session (Cervero & Gaines, 2015). However, limited research is available about the impact on patient care (Cabana et al., 2006; Clark et al., 1998). Furthermore, the study by McCluskey and Lovarini (2005) suggested that many clinicians are not implementing the knowledge and skills gained during a CE session into clinical practice. Therefore, further research is needed to determine if clinicians are using the information and skills from CE to improve their patient care. We must also explore why they are or are not using this information as a means to improve CE sessions and ultimately improve patient care.

Continuing Education Session Format

The formats for CE sessions can vary greatly within athletic training and other healthcare professions. Typically large conferences include sessions with a variety of formats to

accommodate different types of learners. The most common formats in athletic training are learning labs, where the learners are practicing specific psychomotor skills such as a shoulder evaluation; presentations, which are primarily lecture-based and focus on content delivery; and peer-to-peer discussions, where one to two moderators facilitate discussion with the audience.

Research on session format is heavily weighted on presentations; however, in a recent Cochrane review, many of the newly included studies had used an interactive or mixed format (Forsetlund et al., 2009). The research team defined the interactive format as workshops or seminars where participants interact amongst each other in small (< 10 participants), moderate (10-19 participants), or large (> 19 participants) groups (Forsetlund et al., 2009). The interaction included role-playing, case discussions, or skills practice. The mixed format included both an interactive portion and a didactic (presentation) portion (Forsetlund et al., 2009). The purpose of the review was to determine which session format was the most effective for improving professional practice and patient outcomes. Upon analysis, the research team found that mixed sessions including interactive and didactic components were better than either type alone (Forsetlund et al., 2009). The researchers concluded the mixed approach to session format is the most effective, and presenters should focus on outcomes that may be perceived as serious (Forsetlund et al., 2009). They believe these two things may increase the overall effectiveness of CE sessions.

Self-directed Learning

Self-directed learning (SDL) describes adult education and is defined as "a process in which individuals take the initiative without the help of others in diagnosing their learning needs, formulating goals, identifying human and material resources, and evaluating learning outcomes" (Knowles, 1975, p. 18). Garrison (1997) describes a model of self-directed learning that includes

motivation, self-monitoring, and self-management (see Figure 1). Motivation is a key component of adult learning theory because it plays an integral role from initiation of learning activities to the achievement of the cognitive goals (Garrison, 1997). Motivation may be extrinsic or intrinsic depending on the type of learning that is occurring. When considering the CE expectations for athletic trainers, there are both extrinsic and intrinsic components. The BOC requiring CE for credential maintenance is extrinsic motivation; however, there are no specifications on which session athletic trainers attend. Therefore learning is intrinsically motivated because learners have the freedom to choose.

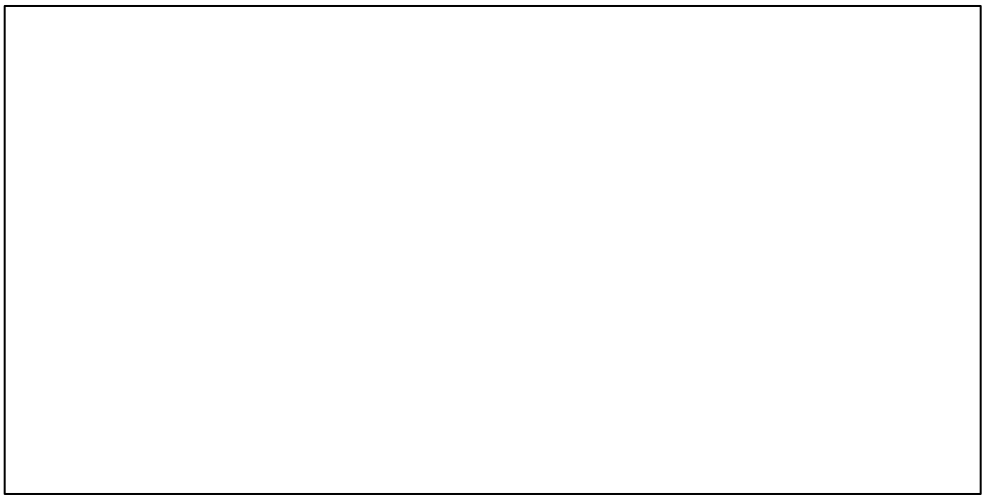

Figure 1. Self directed learning theory model. From "Self-directed learning: Toward a comprehensive model," by D. R. Garrison, 1997, *Adult Education Quarterly, 48*(1), p. 22. Copyright 1997 by Adult Education Quarterly. Reprinted with permission.

Self-management describes the "social and behavioral implementation of learning intentions, that is, the external activities associated with the learning process" (Garrison, 1997, pp. 22). Learners identify learning goals and needed resources. This process does not typically happen in isolation as collaborative learning activities promote meaningful learning. Facilitators are needed to answer questions, provide feedback, and help guide the learner when necessary

(Garrison, 1997). The last component of the SDL model is self-monitoring which describes the "process whereby the learner takes responsibility for the construction of personal meaning" (Garrison, 1997, p. 24). Self-monitoring encompasses both cognitive and metacognitive processes, meaning the learner has an awareness of their learning and has the ability to think about their thinking. The learners must have the ability to integrate knew information with old ideas to promote meaningful learning, and take responsibility for doing so based on the self-monitoring construct. Self-monitoring of learning lacks accuracy, as such learners should seek external feedback (self-management) for assessment of learning.

SDL can be applied to athletic training and the current CE model, because athletic trainers are adult learners who are extrinsically motivated to attend CE, but have the opportunity to choose which content they want to learn (intrinsic). The presenter delivers the information and is typically available at the conclusion to answer questions in an effort to aid the learning process. However, the failure with feedback occurs when the presenter and learners leave the room and part ways. I believe that one of the reasons why athletic trainers do not implement skills into clinical practice is due to a lack of full understanding and confidence in their knowledge of the content. If reinforcement strategies are used to keep the dialogue open between the learner and presenter, the facilitation of the learning process will be improved and athletic trainers will more successfully integrate the skills into clinical practice.

Motivation and Self-regulation

Motivation is essential to creating meaningful learning experiences. Driscoll (2005) discusses three cognitive processes that are important for motivation and learning: curiosity and interest, goals and goal orientation, and self-efficacy. Curiosity and interest are important to motivation because they center on gaining the learners attention and drawing them into the topic.

One can gain the learners' attention by discussing or demonstrating something of importance (relative to the topic) at the beginning of a CE session that stimulates curiosity and interest. Within the current structure of CE sessions, this intriguing event may be a case that the learners can relate to, video, or demonstration of skills they will learn about in the session. These mechanisms should gain the learners' attention and make them interested in what they are about to learn.

Goals and goal orientation are an additional source of internal motivation (Driscoll, 2005). The goal serves as a standard for which learners can evaluate their performance and determine their level of performance and progress towards the goal. Learners should understand the difference between proximal and distal goals. Proximal goals are those that are close and achievable more quickly; for example, learners attending the CE session may set a goal that they will use guided imagery with five patients in the next two weeks. Conversely, distal goals take longer to achieve and are often more difficult. An example of a distal goal would be to address the psychosocial response to injury with every athlete. Proximal goals improve self-motivation and performance greater than distal goals (Driscoll, 2005). Additionally, there are two types of achievement goals: performance and learning (Driscoll, 2005). Learners who set performance goals want to be able to achieve something or perform a specific task or skill, whereas learning goals focus on becoming competent and gaining mastery of the content that is being taught (Driscoll, 2005). Learning and performance goals should be used in combination to motivate learners and instill progress toward content mastery and also performance mastery of specific skills.

Lastly, Driscoll (2005) highlights Bandura's theory of self-efficacy and the role of self-efficacy in motivation. According to Bandura (1977a), "Perceived self-efficacy refers to beliefs

in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). Bandura proposed a system that describes how behavior relates to outcomes (Bandura, 1977a, 1982, 1997). Learners make decisions based on their perceived ability to perform an action and achieve an outcome. They then decide to move forward or not based on those perceptions. For example, if the learners in the CE session believe that they can learn the knowledge and skills needed to implement psychosocial interventions with their patients, they are much more likely to do so than those who doubt their ability to be successful. Bandura (1997a) believed that self-efficacy is an ability that is fluid and can be developed in each individual.

Driscoll (2005) provided a foundation for improving learner motivation. The first step is to gain learners' attention by provoking their curiosity and interest in the topic. Next the instructor or facilitator should help the learners establish goals, which may occur by discussing the outcomes of the CE session, but also by explaining the overall outcome goal for what they can take back to their clinics with them. Lastly, Driscoll (2005) discussed Bandura's self-efficacy theory and how the learners' perception of their ability to be successful impact their learning experience and motivation.

Conclusion

CE is important to ensure continued competence of healthcare professionals and maintain high quality patient care. Athletic training education follows the competency-based education model for professional education. However, practicing clinicians are not expected to demonstrate competency of new skills when they are added to the educational competencies. This discrepancy is potentially dangerous to patients, as the athletic trainer may be implementing skills or techniques that they are not competent to perform. CE can be used to bridge this gap in

professional practice; however, currently there is no requirement by the BOC or state regulatory agencies to ensure competency of new skills. This gap leads into an array problems including protecting patient safety, ensuring clinician competence, and modeling good behavior for professional athletic training students potentially learning from these clinicians. CE provides an opportunity to improve knowledge and skill performance; however, a mechanism to ensure competence for practicing clinicians currently does not exist.

Research suggests that athletic trainers have positive attitudes toward CE and believe that formal CE has a positive impact on their knowledge (Armstrong & Weidner, 2011; Hughes, 2005). However, previous research suggests that clinicians may struggle to translate what they learn in a CE session into their clinical practice (McCluskey, 2005). Developing an understanding of the implementation of CE into practice is extremely important to determine if athletic trainers are using CE from the sessions they are attending and patient outcomes improve following the change in patient care. Previous research has not explored how athletic trainers implement content from CE sessions into their clinical practice. Therefore, one of the aims of this study is to understand how athletic trainers choose to implement or not implement knowledge and/or skills gained during a CE session into their clinical practice.

CE within the healthcare professions broadly uses a self-directed format where clinicians are required to meet a minimum number of hours or units over a specified period of time. However, clinicians have the opportunity to choose those opportunities as they see fit. Previous research suggests athletic trainers with more experience place higher emphasis on course relevancy, while those with less experience believe that the topic of the course is less important when they are choosing CE sessions (Hughes, 2005). There are likely two explanations to this finding, the first being that those with more experience understand their knowledge gaps and are

seeking sessions to decrease those gaps to improve their patient care, while less experienced clinicians believe they still have a lot to learn in all areas. The second possibility is that experienced clinicians have specified areas of interest and seek courses within their areas of interest and comfort compared to less experienced clinicians who may not have developed a specified area of interest. While the first possibility would be the ideal scenario, there is currently no research describing how athletic trainers choose CE opportunities, such as conferences and clinical symposia, or specific sessions. I will ask athletic trainers to discuss how they choose CE opportunities and pick specific sessions, to gain insight toward the two aforementioned possibilities and because it may have an impact on how the integrate knowledge and/or skills into clinical practice.

CHAPTER 3

METHODS

Research Questions

1. What are the motivators for athletic trainers when seeking CE opportunities?
2. What are the motivators for athletic trainers when choosing specific CE sessions?
3. What are the reasons for implementing or not implementing knowledge gained during a continuing education session into clinical practice?

Research Design

I used qualitative methods to understand the motivators for athletic trainers when seeking CE opportunities and choosing specific CE sessions. Additionally, I explored the reasons why athletic trainers choose to implement or not implement knowledge and/or skills gained during CE into their clinical practice. The research questions were explored using Consensual Qualitative Research (CQR), which is an inductive method that integrates the use of (1) open-ended questions through a semi-structured data collection process; (2) several reviewers in the analysis process to provide different perspectives; (3) consensus from those reviewers about the meaning of the data; (4) at least one auditor to check the primary team of reviewers and decrease the effects of bias in the primary team; and (5) domains, core ideas, and cross-analyses in the data analysis (Hill, 2012; Hill et al., 2005; Hill, Thompson, & Williams, 1997).

CQR was developed by psychological researchers to understand better how patients experienced specific life events (Hill, 2012). The first description of CQR was published in 1997 (Hill et al., 1997) as a means to provide a detailed description of CQR so other researchers could replicate the process. Hill and colleagues developed CQR because they were frustrated with other methods of qualitative analysis and felt there were some key pieces missing from grounded theory and phenomenology. Some of the key differences between CQR and grounded theory include the number of participants, the structure of the interviews, the number of researchers analyzing the data, specification of the categories to the participants, and methods of data analysis (Hill, 2012). In grounded theory, the number of participants are dependent on saturation and the researcher concludes data collection when they feel saturation has been met. Whereas, with CQR there is a predetermined number of participants (Hill, 2012). CQR uses a semi-structured interview format, which means there is a list of question asked of all participants; however, the interviewer can ask probing questions (Hill, 2012). In grounded theory, the researchers use an unstructured interview that evolves as more participants are interviewed. Another key difference is the number of researchers analyzing the data, typically with grounded theory only one researcher is used, whereas CQR uses multiple researchers for analysis and external auditors to provide multiple perspectives (Hill, 2012). CQR requires specification of whether the categories or subcategories apply to all of the participants, about half of the participants, or only one to two participants (Hill, 2012). Conversely, grounded theory does not specify how many participants fit into their categories. Lastly, CQR has a fixed structure of data analysis that must be strictly followed, whereas grounded theory is less structured (Hill, 2012).

When discussing the foundations of CQR, we must also acknowledge the philosophical underpinnings. Hill et al. (2005) described CQR as "predominantly constructivist, with some post-positivistic elements" (p. 167). CQR relies on natural and interactive qualitative methods, which aligns with constructivism. However, the presentation of the data and the effort to be as objective as possible aligns with post-positivism. In regard to ontology (the nature of reality), CQR researchers believe there are multiple, socially constructed realities (Hill, 2012). Researchers appreciate the differing perspectives from participants while looking for commonalities between them. In terms of epistemology, CQR is constructivist because it recognizes that the participant and researcher have mutual influence on the interview (Hill, 2012). The researcher's job is to learn about the phenomenon from the participant and ask probing questions to allow the participant to explore their experience in depth. When considering the role of the researcher's values, or axiology, CQR is between post-positivism and constructivism (Hill, 2012). CQR acknowledges that researchers will have biases, but steps are included in the data analysis process to minimize the individual biases of the data analysis team and the external auditors (Hill, 2012). Lastly, the structure of reporting the results is primarily post-positivist because the researchers are as objective as possible, avoid broad interpretations, and report data in the third person (Hill, 2012).

I have chosen to use CQR because of the emphasis on consensus between the data analysis team and an outside auditor. This process theoretically adds to the rigor of the results and provides differing opinions, which may decrease the individual biases of the researchers. I have also chosen CQR because of its recent use in athletic training research to explain phenomena. The details provided and the structure of the data collection and analysis are more appropriate to answer the research questions than other qualitative methods.

Instrumentation

I used two instruments throughout the data collection process. The first was a short, eight question demographic/contact information survey to gather basic information about the participants, including years of experience, highest degree earned, current clinical setting, gender, and age (Appendix A). The second instrument was the semi-structured interview protocol addressing the research questions (Appendix B). I developed the interview protocol based on current CE literature in the healthcare professions. The interview included eight open-ended questions about how the participant chose both CE opportunities and specific sessions, and why the participant did or did not use knowledge and/or skills gained from a session in their clinical practice. Each interview took approximately 15-20 minutes to complete. Two qualitative experts in the field reviewed the format and structure of the interview protocol to ensure it appropriately addressed the research questions.

Sampling Procedures

I used the snowball sampling method to recruit certified athletic trainers. Snowball sampling is a method of sampling participants through a referral process (Biernacki & Waldorf, 1981). Within this method of sampling, individuals share information to potential participants or share the names of potential participants with the researchers. I used the method of contacting program administrators of CAATE accredited programs and colleagues within the profession and asked them to share the information about the study with athletic trainers who met the inclusion criteria. The individuals I contacted initially were also eligible to participate in the study if they chose to do so. The only individuals excluded from participation were Indiana State University Doctor of Athletic Training (DAT) students because they were used for pilot testing of the survey protocol.

Program administrators of CAATE accredited professional athletic training programs and colleagues were contacted via telephone or email. I informed them of the purpose of my study and asked if they would be willing to share the information with the athletic trainers who serve as preceptors for their program or athletic trainers with whom they work. Once the individual confirmed s/he would forward the information for my study, the individual was sent the Qualtrics link to the informed consent and demographic survey. Athletic trainers who consented to participate in the study were contacted to schedule the interview. Participants who did not respond to the initial contact e-mail were sent a follow-up email after seven days. Prior to the start of the recorded interview, participants provided me with their pseudonyms and agreed to the verbal consent statement. Next the audio recording was initiated and I used the semi-structured interview protocol consisting of eight questions, where participants were asked about how they chose CE opportunities and specific sessions, and how they implemented knowledge and/or skills gained from CE sessions into clinical practice. Follow-up probing questions were asked as necessary to extract information from the participants. Fourteen athletic trainers participated in this research study. Individual participant demographics are presented in Table 2. Interviews continued until data saturation occurred, which occurred when no relevant information emerged and no additional data needed to be collected (Hill, 2012; Hill et al., 2005; Hill et al., 1997).

Table 2

Participant Demographics

Pseudonym	Age	Gender	Years of Experience	Current Clinical Setting	Highest Degree
Rosie	55	Male	33.0	College/University	Post-professional Master's
John	26	Male	4.0	College/University	Entry-level Master's
Mahatma	60	Male	38.0	Secondary schools	Entry-level Bachelor's
Lee	25	Female	2.5	College/University	Post-professional Master's
Rachel	27	Female	1.0	College/University	Entry-level Master's
Olive	35	Female	14.0	Secondary schools	Entry-level Bachelor's
Mya	26	Female	4.5	College/University	Entry-level Master's
Brian	30	Male	7.0	College/University	Post-professional Master's
May	27	Female	4.0	College/University	Post-professional Master's
David	33	Male	10.0	College/University	Post-professional Master's
Ann	26	Female	4.5	Secondary schools	Entry-level Bachelor's
Emily	30	Female	9.0	College/University	Post-professional Master's
Rio	37	Female	15.0	College/University	Post-professional Master's
Nancy	27	Female	6.0	Clinic and hospital	Post-professional Master's

Research Team

I served as the primary investigator and a coder on this project. My research experience includes the completion of a thesis to earn my Master's degree, serving as a research assistant on another thesis project and serving as a student mentor for a student in the DAT program. My research experience is primarily quantitative; however, the DAT project that I have been involved in is a qualitative project. My research interests lie in CE and continued competence

within healthcare professions, specifically athletic training. I believe that CE is essential to improve clinician knowledge and to ultimately protect the patients athletic trainers treat on a daily basis. I do not think the current mechanism for CE within the profession is effective and I believe it is important to understand if, how, and why people are choosing or not choosing to integrate skills into their clinical practice. While there is little research to suggest that clinicians are not integrating knowledge and skills into clinical practice, anecdotally I believe many clinicians attend CE sessions to earn their CEUs to keep their credential and ultimately their jobs. Once we have a better grasp of the "why," we can begin developing and testing solutions to improve the integration of knowledge and skills into clinical practice, which ultimately will improve patient care.

The second coder for this project was a faculty member in athletic training with extensive research experience. She has served as a faculty mentor on numerous graduate and undergraduate theses and research projects over the past 12 years. She also has broad research experience spanning work-life balance, heat and hydration, workplace discrimination, and continued competence. Her current research line centers on continued competence in athletic training and helping clinicians to identify areas of strength and weakness in their knowledge and skills. Her biases include a belief that the current structure of CE in athletic training needs to be revised to improve clinician knowledge. Currently clinicians can attend any sessions they wish to earn their CEUs and there is research to suggest that clinicians choose sessions they are interested in or that are convenient. Furthermore, she has completed and mentored Master's student projects that suggest athletic trainers are overconfident in their knowledge and are not able to accurately identify their knowledge gaps, which places patients at risk.

The external auditor for this project was a faculty member in education with experience conducting observations, focus group sessions, and interviews. She has engaged in research regarding history education and experiential learning, instructional design for teachers to adapt English as a second language (ESL) children to early childhood education, and the application of diversity research. Her biases in the healthcare professions are limited; however. she does believe that continuing education is important for clinicians due to her experience working as a paramedic.

Data Analysis

Quantitative data was analyzed using SPSS. Descriptive statistics were calculated for demographic data. Demographic data were used to present data on the sample. Qualitative data was analyzed using CQR methodology. Each participant completed an audio-recorded interview with the primary investigator following the interview protocol. Following the interview, I transcribed the audio-recorded file verbatim and removed all identifying information. The transcripts were then sent to the participant for member checking where each participant had the opportunity to read the transcript to ensure the transcription was correct. The participant was not able to delete any of the content provided in the transcript, but had the opportunity to add or clarify any statements by adding comments to the document. Participants were given 7-10 days to complete the member checking process. Three participants responded to the member-checking email.

Data analysis occurred in four phases: 1) identification of initial code domains; 2) extraction of core ideas from each domain; 3) cross-analysis of multiple participant interviews; and 4) establishing the frequency of data presented in the determined categories (Hill et al., 1997). The primary investigator and research assistant served as the analysis team. They

independently reviewed the transcripts in their entirety to obtain a sense of the data. After reviewing at least three interviews, the analysis team met and determined initial code domains. The domains were used to combine data on similar topics (Hill et al., 2005; Hill et al., 1997). Once the domains were agreed upon, the analysis team members coded the first transcript independently and assigned the data to the domain they saw fit. Following the coding of the first transcript, the analysis team reconvened to discuss their coding until they reached consensus about where to place the information. A consensus version of the domains was used to recode the initial transcript and subsequent transcripts. The analysis team then coded multiple transcripts before moving to the next phase of the analysis.

The second stage of the analysis involved the construction of core ideas from the data in each domain. The analysis team independently extracted the core ideas and then met to achieve consensus on the core ideas. After the core ideas were extracted, an auditor checked the work to ensure that the data was appropriately analyzed and multiple perspectives were considered and discussed before consensus was reached (Hill et al., 2005; Hill et al., 1997). At this time the information was sent to the external auditor for review. Upon return of the information, with feedback on the analysis, the research team made necessary adjustments.

Cross-analysis of multiple participant interviews was the next stage of data analysis. The analysis team looked for similarities and differences within the interviews. Cross-analysis allowed for the development of categories, which included the core ideas. The categories were created by the analysis team members independently and then discussed and agreed upon for consensus. The analysis team continued analyzing the transcripts until data saturation occurred. After the results were written, I asked two to three participants to review the results and comment on how the results fit with their experiences (Hill et al., 1997).

CHAPTER 4

RESULTS

Four themes emerged describing participant perspectives on CE: 1) value of CE, 2) clinician-centered CE selection, 3) improving CE, and 4) implementation of CE. Two themes were further broken down into subthemes. Figure 2 displays the CE perceptions of athletic trainers.

Figure 2. Emergent themes and subthemes of athletic trainers' motivators and application of continuing education.

Value of Continuing Education

The first theme that emerged was the value of CE, which described how participants viewed CE in regards to their clinical practice. Participants typically placed value on CE to advance their knowledge, practice in an evidence-based manner, and keep them up-to-date as a clinician. Overall participants were positive in their views of CE. May stated, "It's a chance for us to always be at the forefront of evidence-based medicine." While, Olive discussed the benefits of the EBP CE sessions:

> Also, it's hard when you're working full time as an athletic trainer to read research and to stay on top of research so a lot of times these courses, for me, are kind of a refresh on what's new. Someone else has already read a lot of the research and kind of giving me the bullet points of what is important and then providing the resources to look into it further if necessary.

The BOC's EBP format requires that CE deliverers complete a specific application that includes evidence to support the topic of the presentation, learning objectives, and clinical application of the content (Board of Certification, 2015a). Throughout the completion of this process, the presenters are compiling data for the presentation from numerous sources, which makes the EBP session format helpful for practicing clinicians because the presenter has done the synthesis of the literature, much like Olive discussed. Participants also highlighted the benefit of staying current with new evidence and techniques that would ultimately improve their patient care. Lee said, "I just think it's really good that we make sure that we are staying up-to-date with everything that we are doing." While Brian stated:

> It's important for us to continue to develop as professionals to continue to provide the best care that we can for our patients. Going forwards what I typically tell people, you

> know if I'm not learning something new every day, if I'm in this profession 20 years down the road and I'm still not learning something new anymore then it's safe to say that I shouldn't be in this profession anymore.

Some participants stated that CE sessions allowed them a chance to refresh themselves on information that they had not used for a period of time. Mya said CE helps to "remind you of things that maybe have gotten lost within the years and years and years of experience." Research specific to skill decay suggests that practicing clinicians experience skill degradation and knowledge decay as soon as six weeks after learning the content (Yang et al., 2012).

David believed that much of CE reinforces content from professional education rather than improving knowledge beyond entry-level:

> I do think that much of what we do have in regards to continuing education is directly useful for reiterating those basic skills that surround the BOC exam and not necessarily for expanding an athletic trainer's scope of knowledge.

One may consider CE builds on the entry-level knowledge by expanding upon areas in which professional students typically find difficult or challenging during their professional education. Advancing and improving knowledge were also addressed as a value of CE. Mya commented, "I think it's really important because everything is always constantly changing in the profession and new research is coming out all the time so to stay up to date and you know increase your knowledge." Some clinicians also described how CE is valuable and lead to actual changes in their practice. Rachel discussed a recent CE course that she attended and how the information she learned is going to guide changes at her institution:

> By attending another [course] we are implementing a new skills session for our coaches who are CPR and AED certified and we are going to be making them do extra hands-on skills sessions just based off of one of the presentations.

Participants also cited post-professional education as a mechanism for obtaining CEUs and advancing their knowledge. Emily commented on the importance of post-professional degree programs helping her understand the most current research:

> For me continuing education has been kind of a big deal because I went ahead and got my master's in athletic training and I'm getting my doctorate in athletic training, so I've really seen over the years the research moves in such different directions that if I didn't continue my education, I didn't continue to learn the top research then I'm missing out so much on helping my patients.

Lastly, participants also discussed how CE was important to help them address a weakness within their clinical practice. David discussed:

> I think the first part to that answer is realizing the areas in which maybe an athletic trainer is deficient. Specifically for myself I know there are two specific areas that I would pursue continuing education in because it's been a long time since I have been able to review those areas, and that would be nutrition and strength and conditioning.

This mechanism of choosing CE has been commonly reported in the literature. Overall, the participants discussed the importance of CE to maintain EBP, stay current with new or changing information, and to improve their knowledge or skills on topics they do not use as often.

Clinician-Centered Continuing Education Selection

The next theme that emerged focused on how participants selected conferences to attend and/or specific sessions. This theme contains three subthemes centered on specific selection

factors of sessions, selection factors for conferences, and the amount of CE participants typically completed.

Selection Factors for Specific Sessions

When asked about selection of specific sessions, participants primarily focused on their perceived needs and/or area of weakness, what they believed would benefit their patient population, and sessions related to their current practice setting. A few participants also emphasized acquiring the evidenced-based practice category CEUs first.

Some participants highlighted their areas of interest as a starting point for choosing CE sessions. Emily specifically addressed attending sessions that benefit her patient population and that she's interested in stating, "It's which ones are more applicable to my patient population or if there is something that is shoulder related or something that I'm really interested in, I'll usually go for that." Other participants utilized their areas of weakness along with patient population to guide their choices in CE sessions. David considers both the needs of his current clinical setting and perceived areas of weakness:

> I think I identify what I'm going to attend based on the specific needs of my practice setting and so, within my practice, if I realize that there is an area in which I know that I am going to need to review or enhance something within, my practice, I'll typically attend a talk there first.

CE across the healthcare professions employ a similar structure, where clinicians are required to complete a specific number of CEUs, but there is little guidance beyond meeting the minimum expectation. The BOC now requires 10 EBP CEUs; this places some focus on the EBP sessions; however, these sessions vary greatly in topic. Many participants highlighted the desire to attend EBP CEU sessions first to earn the required number of credits and then choose other sessions

that fit into their schedule. John discussed the importance of getting the EBP category CEUs first and a previous relationship with the speaker: "Obviously you go for the EBPs right away trying to lock those down. I usually go off the title of the seminar or if I know the person that is doing the seminar I will lean more towards that."

Expertise of the speaker was also discussed by some of the participants. Some preferred to attend sessions where the speaker was a physician or someone they knew was an expert on the topic because they felt it was more likely they would learn more from that person. Whereas others like Olive were looking at the speaker's background and the ability to relate to his/her current practice setting:

> I'm also looking at the instructor and what their real-life looks like. If they are someone who only does biomechanical research, you know, maybe I'm going to that course for background information, but that's probably not going to affect my day-to-day practice that much, but if it's someone who actually practices in a setting similar to me or practices in a clinic and has at least a touch point in a setting that is similar to me, I'm going to choose that course compared to another course.

Selection Factors for Conferences

In regard to selection factors for conferences, participants primarily discussed cost, travel distance, and time as barriers. These barriers have been commonly cited in the literature as barriers to seeking CE (Armstrong & Weidner, 2011; Eberman & Edler, 2017, Walker et al., 2008). Rosie stated:

> It's based on who's paying for it. Over the years I've been fortunate enough to be a part of district and national committees where part of your way is paid for, so it makes sense to gains your CEUs on somebody else's dime.

Attendance at district and national conferences can be expensive when you consider the cost of travel, lodging, meals, and registration. Individuals who serve on state, district, and national committees often receive reimbursement to offset the cost of attendance due to their roles on the committees and the meetings that often take place in conjunction with the conference. Some participants also cited their employers' help to cover the costs of CE attendance, which decreased barriers. May commented, "I've been very fortunate to work at an institution that's willing to pay for a lot of my CEUs, but I would probably imagine if I was at another institution cost would be another factor in me going."

Some participants also stated the location and travel distance were important selection factors. Nancy stated, "I would definitely say cost and I guess ease of getting to the location." Rio added:

> For me the big one is location. I'm going to travel somewhere close. I try to stay within driving distance and I try to find locations where I know people so housing is a little bit cheaper. So I just have to pay for registration for the course.

Participants' selection factors and barriers to selection were all clinician-centered. They focused on their perceived areas of weakness, their patient population or current setting, cost, and travel distance. None of the participants cited any patient-centered selection of CE opportunities. Their selections were all based on their perceptions of what their patients needed.

Amount of Continuing Education Completed

All participants met the minimum requirement for CEUs, while others exceeded the expectation. Brian commented, "I would say I do at least the minimum, but if there are other opportunities out there that I see are going to benefit me, then I will certainly approach those opportunities." Rio stated, "I complete way more than the 50 CEUs that you need, usually up

around 80-90. Additionally, Lee and Emily attributed their high number of CEUs to their post-professional education: “Since I’m newly certified I’ve gotten a lot of it with class because I was in grad school” (Lee) and “I think I turned in like 200 hours of continuing education this last time” (Emily).

Improving Continuing Education

The next theme that emerged focused on how participants thought CE could be improved. A few participants felt that the current structure is working and nothing should be changed; however, many participants provided suggestions that they believed could be integrated into each CE session. Others highlighted the need for more hands-on and interactive sessions, which better align with the hands-on patient care athletic trainers provide daily. Ann discussed her belief that hands-on and interactive sessions would be more beneficial:

> I would say a lot of times the courses that are offered to us are all either prerecorded from a conference or PowerPoint presentations that you’re watching online and I think it’s sometimes difficult to take that information and implement it because you’re not having that hands-on portion of it, and I think as athletic trainers a lot of us thrive off of that hands-on approach to things with labs and things like that and if there was more of that it would be a little easier for us to take these new concepts and implement them.

Previous research (Armstrong & Weidner, 2011; Eberman & Edler, 2017) has demonstrated athletic trainers’ preferences to attend clinical workshops and small group, interactive CE sessions compared to the large lecture sessions that currently dominate the conference schedules. Emily also identified hands-on and interactive sessions as her optimal CE session format because she would be able to receive feedback from the presenters, which she believed would be beneficial:

> Most of my continuing education has been online classes or something similar, so I think sometimes a hands-on [course] would be easier. We have used videos in classes and kind of talked about them, but sometimes having somebody watch you do the exercise or see them supervise a patient and be able to ask questions in the moment might be a little bit more helpful.

Another mechanism to improve CE would be to recognize and communicate the barriers to implementation within the presentation. David stated:

> I think that one way we could do this is potentially by allowing, or attempting to identify, as part of our continuing education courses, you know, some of the most salient barriers for athletic trainers, or if we are going to potentially conduct a course potentially maybe just doing a small survey prior to the course that would actually assess perceived barriers for implementation and/or things that the athletic trainer would potentially see as difficulties that way those things can be addressed as part of the session.

Some barriers such as financial resources may not be resolved by highlighting them during the presentation, but barriers such as time, policy requirements, or systems level barriers could be addressed in the presentation to provide athletic trainers with a framework for overcoming barriers within their clinical practice.

Some participants would like to have a physical resource to look back on at the conclusion of a session. Olive said:

> You know in continuing ed[ucation] something to walk away with, if I go to a course I like to walk away with something as a reference to put on myself so that I can go back and look at it.

As previously stated, speakers who have BOC approved EBP presentations have already synthesized the literature to compile the evidence for their application and presentation (Board of Certification, 2016). Creating a short handout of key points could be a helpful mechanism to help athletic trainers remember the content from the session. Additionally, other participants believed that centralized resources or individualized resources would be helpful to integrate new knowledge and skills. Emily specifically discussed how centralized resources would be helpful:

> I think sometimes it's overwhelming how many different types of patient-reported outcome measurements there are. So sometimes if things were all put in one place, it would be a lot easier.

Mya would like to see specific resources that help guide implementation following a CE session:

> Some courses that I've gone too from the NATA, I know they have online websites and stuff, but there is always so much information there that kind of gets lost in the translation and maybe you get to it and maybe you don't get to it. I think if it was more interactive or something like that, like an online tool to build your own plan and print it out and give it to your athletes, they could go online and do something like that, or check off that they could do it each day.

Some participants also cited the importance of socializing students to the CE process prior to graduation to help with the transition. John commented, "It would also give the [professional students] a chance to see what a seminar might be like to kind of introduce them to that." Socialization of students and newly certified athletic trainers has been widely studied when exploring transition to practice issues within the profession (Mazerolle, Eason, Clines, & Pitney, 2015; Thrasher, Walker, Hankemeier, Mulvihill, 2016a; Thrasher, Walker, Hankemeier, Mulvihill, 2016b; Thrasher, Walker, Hankemeier, Pitney, 2015). Considering a mechanism for

socializing students to CE prior to their completion of their professional program may better prepare them for the expectations to maintain their credential.

Implementation of Continuing Education

The last major theme that emerged from the data highlights implementation of knowledge and skills into clinical practice. Within this theme, four subthemes were identified including barriers, practitioner confidence, patient response, and lack of implementation.

Barriers to Implementation

Regarding barriers to implementation, participants cited time, coaches, colleagues, and financial resources as the most common problems. May stated:

> I guess in this setting it's always time. Everyone tries not to say that, but sometimes it is time, sometimes you just don't have enough time to sit down and talk to them for 45 minutes because they have to get to practice or something like that.

Time is a difficult barrier to all practice in athletic training and has been cited throughout the literature as a barrier to effective patient care and life-work balance (Mazerolle & Eason, 2016; Mazerolle, Pitney, Casa, & Pagnotta, 2011; Price et al., 2010). Rio also cited time as a large barrier to high quality patient care:

> Probably the overarching answer to that question and to a lot of questions I think is just time. I sometimes wish that I could spend more time with certain patients than I actually can. I think if I just had some time to spend it might help a lot with that instead of kind of feeling rushed and trying to get to the next patient, so I think time is a huge factor in delivery good patient care.

Some participants also mentioned coaches as a barrier. Ann stated, "Our biggest barrier I think at this level would be trying to get coaches on board with some of the new trends." Ann

went on to discuss coaches who had experience with athletic trainers as athletes being less of a barrier, compared to coaches who did not. Conversely, others, like May, specifically stated that coaches were not barriers to implementation, "It's not like I'm not able to; there isn't a barrier in terms of a coach or a boss of mine that says you can't try this." Whereas, Nancy talked about a colleague who was a barrier to her implementation of new skills:

> The head athletic trainer that I worked with … he was kind of stuck in his traditional ways, especially with using certain exercises, you know the same protocols kind of all the time. I know we tried to implement new, different rehab protocols and got some pushback from it.

Similarly, Brian discussed a level of comfort within practicing clinicians that has allowed them to become satisfied in how they practice:

> I think a lot of us within this profession, you know regardless of professional development and integrating that knowledge, it's just that we have become almost too comfortable with how we have practiced up until these points, and sometimes I think people forget, um, it's not that people forget, but I think because they are comfortable with how they practice then they can become too comfortable with how they do things and they have to open themselves up to new ideas with practice and putting those things into practice.

Many participants also cited the lack of financial resources as a barrier to implementation because they have attended sessions that require specialized equipment. Mahatma stated, "Well in terms of equipment, I can't go out and purchase a three to four thousand dollar machine." Lee also said, "I don't have Graston [instruments] at my work so you know that kind of stinks because I've learned this but now I can't really do anything because I don't have a Graston set."

Clinician Confidence

Many participants discussed confidence in their ability to implement knowledge and skills from a CE sessions. Some highlighted how comfortable they felt with the information, while others discussed how it improved their confidence in patient education. Some participants also identified their lack of confidence when applying new skills with their patients. This seemed to be centered on skills they had never learned before, compared to improved confidence with knowledge and skills from which they had previous foundational knowledge. Mya specifically addressed her self-identified weakness of nutrition and how CEUs in that area improved her confidence:

> A lot of athletes ask me about their nutrition, so I took a whole bunch of CEU courses on that and I can now apply that along with everything I have learned into what I am explaining to the athletes and have a better confidence in knowing what I'm talking about.

She later added, "When I'm more confident, they are more confident in their well-being." Mya's attendance of CEU sessions related to previous nutrition knowledge and the CE improved her confidence. However, when participants attended a session for something they hadn't learned previously, they lacked confidence to implement the information or skill with their patients. Rachel highlighted her lack of confidence when the skills were something she had not previously learned:

> Sometimes if I don't feel 100% confident in the skill that I learned, if it's a skill that I haven't been exposed to before I still might be turned off and not use it 100% just because I of me not feeling confident with that skill yet.

Rio also added that finding time to get hands-on practice before implementing something new with a patient is challenging, but helps to improve her confidence:

> My personal barrier might be confidence in the sense that, if I've learned something new and I'm trying to implement it on a patient and it's the first or second time I'm doing that, I might be a little bit hesitant with some of my explanations or a little hesitant with some of my hand placements or treatment options so it may look to the patient as if I don't know what I'm doing, so it's been a challenge to get some hands on practice time before you're going to implement it in a patient case.

However, Ann discussed how she has built a foundation of knowledge and continues to build on that knowledge to improve her patient care, "I've just been able to build on that year-by-year because now I have the foundation and every time I see a new class that is associated to that I'm taking it." Additionally, some participants liked to integrate the new information into their clinical practice as soon as possible to prevent themselves from forgetting the information and determine if it positively impacted their patients. Olive stated:

> I really like to integrate something from that course right away into my practice, A) so I remember what I learned and B) to see if what they are claiming holds true in my patient population and in my practice.

Patient Responses

Patient responses to changes in treatment were subjective. Many participants described their patients' responses as positive. They also provided subjective assessments of patient improvements. Rachel discussed the positive response from one of her patients: "He realized like 'oh okay, this is actually doing something for me,' so he responded well to the education

that we were doing, to the exercises we were doing, and he will be returning for more." May talked about how her patients' perceived the minor adjustments in her treatments:

> I think they saw a difference and I made a point to not necessarily record what they said, but just ask them during the evaluation if they liked the treatment better or if they preferred the one prior too, which wasn't really too much different, just a little tweak here and there.

Only one participant discussed a time when she implemented something from a session that was unsuccessful. Nancy referred to a time when she altered her treatment for an acute ankle sprain:

> When I learned in a lecture symposium about how new research is saying icing after acute ankle sprains sometimes can decrease good blood flow to the area and things like the whole debate on whether or not icing really helps. I remember I implemented that with an acute ankle sprain, a volleyball player, and decided not to ice and do more ankle pumps and range of motion, and soft tissue massage, and he was open to it because we had built a good rapport and trust, so that went smoothly.

When asked about the patient's outcome Nancy said:

> That specific case, I think because of the severity of his sprain, I think that ice might have helped a little bit more, he ended up having a lot of edema throughout his treatment that we were always struggling with, so even though I tried a new technique and not icing right away, sometimes I think back and wonder if that was a factor on why he had so much edema throughout his rehab process.

Many participants also emphasized the importance of developing a trusting relationship with patients. Once they had established a good rapport with their patients, the patients were

open minded and trusting that the treatment the clinician would provide them was in their best interested, even if it was a deviation from the treatment they had been receiving. Mahatma commented:

> I explain to the athlete, this is something that I learned at a recent seminar and it's been found to be effective and I would like to try it and they're pretty grateful with it. I've been at this school for 17 years and the kids trust my judgment.

Lack of Implementation

Lastly, there were a few participants who were not able to provide a specific example of a change in patient care following a CE session. Mahatma stated:

> Nothing specific, but again, just learning and then implementing it. I mean over time it's been, you know like, things have changed. Things have gotten better. There might be a different way of doing stuff. As far as anything specific, I really couldn't pinpoint anything.

Brian suggested that much of the change to his clinical practice has come from other athletic trainers and not formal CE sessions:

> I'm trying to think of all of the CEU opportunities I've had over the years that I've actually applied to my clinical practice. I think some of the things that I have actually incorporated into my daily practice are things that I have seen from other athletic trainers and how they practice.

Additional Key Topics

This section includes two topics that did not fall into the four major themes and did not obtain data saturation. However, I have included them here because they are important considerations for CE and are topics being discussed within the athletic training profession. The

first is interprofessional practice; this has been widely discussed in the athletic training profession for years and is not yet a component of the professional standards, however only one participant discussed seeking interprofessional CE. Olive stated, "I like to do something that's multidisciplinary because I also like to know what other people that work in the sports medicine team are doing."

One participant is currently employed within a physician practice. When asked if Nancy felt as if there were CE sessions specific to her current clinical practice she commented:

> To be honest, I don't. This past year I did go to [district] meeting and I went last year and this year, this year was a little bit easier to find topics that were applicable. I have even done the online quizzes and for those, I really struggle to find topics that were applicable.

Informal CE includes learning from colleagues and means in which one does not receive specific credit (CEUs). While this information likely contributes to increased knowledge and improved patient care, athletic trainers should consider how informal CE could also contribute to both knowledge and patient care.

CHAPTER 5

DISCUSSION

CE is intended to improve professional practice beyond entry-level knowledge and skill performance (Board of Certification, 2015a). The purpose of this study was to determine athletic trainers' motivators for seeking CE and how they apply CE knowledge and skills into their clinical practice following a CE session. These data provided a clearer picture of how and why athletic trainers pursue CE opportunities, as well as how they chose to implement information following a session.

Value of Continuing Education

Participants discussed the value of CE to advance their knowledge, to help them to maintain EBP, to keep them up-to-date with new research and trends, to recover lost knowledge over time, and to address their self-identified weaknesses. Overall, participants were positive regarding their views on how CE is valuable to them as a healthcare professional. This result is supported by previous research suggesting athletic trainers have positive attitudes towards CE (Hughes, 2005). However, a positive attitude toward CE is not equivalent to learning or applying new knowledge, as is expected by the BOC, state legislatures, and patients. Welch, Van Lunen, and Hankemeier (2014) explored athletic trainers' knowledge of EBP following a modular online training course. The research team found that knowledge improved following

the 10-module course; however, during a follow-up interview, some participants commented that their clinical practice had not changed following the intervention (Welch, Van Lunen, & Hankemeier, 2014; Welch, Van Lunen, Hankemeier, et al., 2014). This finding is consistent in occupational therapy as well (McCluskey & Lovarini, 2005). While clinicians from various health professions view CE as important, it is unclear if and how they are integrating knowledge and skills from CE into their clinical practice.

CE also serves as a mechanism to ensure high quality patient care and to protect patients. Healthcare professionals who do not actively engage in the continual learning process pose a danger to the patients they are treating because research has demonstrated that knowledge and skill decay over time (Duran et al., 2008; Einspruch et al., 2007; Fischer et al., 2012; Gombeski et al., 1982; Hamilton, 2005; Kopacek et al., 2010; Mahony et al., 2008; Yang et al., 2012). Therefore, it is imperative that healthcare professionals engage in CE to maintain competency within their scope of professional practice. Some have proposed a mechanism of recertification to ensure competency. However, cognitive assessment is the lowest level of determining competence and should not be used as a stand-alone mechanism to determining a clinician's areas of weakness (Miller, 1990). In 2016, the AMA released a statement opposing the use of recertification exams for specialty certifications within medicine (American Board of Medical Specialties, 2016). Within physician practice, the maintenance of certification process includes self-assessment, lifelong learning activities to assess current clinical practice, and measurement of improvements in patient care. The value of CE is likely to improve if the focus of CE shifts to improved patient care and assessments of change in patient outcomes, compared to the current method of assessing clinicians' perceptions of learning.

Currently athletic trainers are evaluated on completion of CE sessions, where assessment may only include the learners' perceptions of how well the presentation met the learning objectives. Moreover, those delivering the course materials are only responsible for summarizing the effectiveness of the delivery, not the amount of learning that occurred. This method is dangerous to patients, in that athletic trainers are not expected to demonstrate knowledge gain and competency in skills performance, prior to application with a patient. Shifting the mechanism of CE to a focus on continued competence and maintaining knowledge within the domains of athletic training would likely prove beneficial to athletic trainers and the patients they are treating. Research of family practice physicians demonstrates the importance of maintaining a broader scope of knowledge to maintain certification (Peterson, Blackburn, Peabody, & O'Neill, 2015). Family practice physicians with a broad scope of knowledge performed better on an assessment of competence, compared to those with a narrower focus (Peterson et al., 2015). This finding supports the notion that athletic trainers should maintain their professional skills within the five domains of athletic training, utilizing an assessment of knowledge, skills performance, and patient outcome data to guide their CE. Theoretically, this would improve their patient care across the domains of athletic training and ensure continued competence within professional practice.

Clinician-Centered Continuing Education Selection

Participants discussed how they chose conferences/clinical symposia, specific CE sessions, and how many hours of CE they reported. All participants reported meeting the minimum requirement, which is to be expected because they must meet the minimum requirement to maintain their certification. Some participants reported well over the required 50 CEUs, many of which are or were enrolled in a post-professional degree program. When

discussing specific sessions, they typically addressed their preferences for session format and content, whereas when asked about conferences they discussed barriers to attendance. The barriers to choosing CE opportunities (time, cost, and travel distance) likely have a negative impact on the learners' ability to select sessions because they are bound by the sessions available at the conferences they select. Participants' selection of sessions centered on their perceived needs, convenience, current patient population, clinical practice setting, and expertise of the speaker, which aligns with previous research regarding CE motivators (Walker et al., 2008). Cost of attendance and amount of travel required were the two most commonly cited barriers to attending conferences. Athletic trainers have consistently reported both time and cost as barriers to participation in CE (Armstrong & Weidner, 2011; Eberman & Edler, 2017; Walker et al., 2008).

When selecting specific sessions, participants discussed choosing sessions based on areas of weakness and/or areas of interest. Self-directed learning theory supports the notion that athletic trainers would choose to learn more about topics they are already interested in (Knowles, 1975). Hughes (2005) previously concluded that athletic trainers with more experience placed higher emphasis on the content of the course compared to those with less experience. However, Hughes (2005) was unable to conclude the underlying rationale for this finding. One potential explanation could be that clinicians with more years of experience have specific areas of interest in which they pursue CE; whereas, clinicians with less experience have not had the time to develop this area of interest and therefore have less concern about the course content. Pursing CE within a specific area of interest is potentially dangerous to patients and may expose athletic trainers to increased liability because athletic trainers are expected to maintain their knowledge and skills within all domains professional practice (Board of Certification, 2015a). Providing

athletic trainers with external feedback and input regarding their areas of weakness may stimulate the self-management process of self-directed learning and cause the athletic trainer to reflect on the knowledge they are lacking, which in turn would intrinsically motivate them to pursue CE in that area.

An alternative explanation to Hughes' (2005) finding could be attributed to more experienced clinicians' better understanding their areas of weakness and selecting to attend sessions to mitigate their knowledge gap. Whereas, less experienced clinicians struggle to identify their knowledge gaps and/or recognize their need to continue learning in many areas, leading them to rank course relevancy lower on a preference scale because they perceive they have much to learn. However, researchers have demonstrated athletic trainers' inability to accurately identify their knowledge gaps and needs for CE, regardless of age or experience (Eberman & Tripp, 2011; Edler & Eberman, 2017; Edler, Eberman, Kahanov, Roman, & Mata, 2015; Edwards, Eberman, Peterson, & Games, 2015; Neil, Eberman, Games, & Kahanov, 2015). These findings within the literature, although not explicitly, suggest that athletic trainers need an alternative mechanism of choosing CE opportunities other than perceived need and/or areas of weakness. One mechanism to better facilitate CE is a method of guided CE, where participants engage in quality improvement activities such as a low-stakes assessment of knowledge and review of patient outcomes (Eberman, Edler, & Games, 2017). This assessment would determine specific areas of weakness and guide clinicians to seek CE in those areas, eliminating selection by preference or perceived need.

Participants also discussed patient population as a mechanism for identifying CE opportunities; many specifically discussed choosing CE sessions they felt were related to their patient population. This method of identifying CE sessions is also problematic because athletic

trainers are not using quality improvement mechanisms to determine where their care is lacking and to guide their CE choices. A recent study found only 26% of athletic trainers are collecting patient-reported outcome measures (Valier, Jennings, Parsons, & Vela, 2014). This number is potentially higher than the population because those not using patient-reported outcome measures may have self-selected not to participate in the study. The authors cited low (31%) response rate as a limitation of the study, suggesting it may not represent the entire population of athletic trainers (Valier et al., 2014). Additionally, athletic trainers are required to document their patient encounters, providing detailed information from their interactions for legal reasons, insurance reimbursement, and to establish patient health history records. Athletic trainers cited their motivators for documenting patient care were improved communication between healthcare professionals, monitoring patient care, and for legal protection (Welch Bacon, Eppelheimer, Kasamatsu, Lam, & Nottingham, 2017). Medical documentation provides another opportunity for athletic trainers to assess their quality of patient care as a mechanism to guide their CE choices based on areas of weakness. Athletic trainers can review data such as time to return to activity, patient satisfaction, patient referrals, etc. to help identify areas for improvement. This information should be aggregate data over a period of time and may be compared to peers within the profession to determine where interventions may be improved. This objective data may help guide clinicians to pursue better CE opportunities to improve their patient care.

Considering a three-pronged approach including personal factors (time, cost, travel distance), low stakes knowledge assessment, and a review of medical documentation to provide data on patient outcomes should be used for guiding athletic trainers' CE opportunities. The data from the knowledge assessment and medical documentation will help paint a clearer picture of where the clinician may possess a knowledge gap and need CE to improve their performance of

skills/techniques. Thus the focus of CE shifts from attendance and perceived knowledge gain to actual knowledge gain, change in skills, and improved patient outcomes (Kitto et al., 2013).

Improving Continuing Education

Participants also provided suggestions for the improvement of CE including communication of barriers in advance, socialization of students to CE sessions, increased number of hands-on or interactive sessions, physical resources upon which to look back, and centralized resources for things like patient-reported outcome measures. CE is predominately delivered in a didactic lecture format, whether it is face-to-face or online synchronously or asynchronously (Forsetlund et al., 2009). Participants suggested shifting the format of CE sessions into a more hands-on or interactive session that resembles current clinical practice. Bandura's (1977b) social learning theory supports this shift to interactive CE sessions, because athletic trainers would learn how to perform the skills by doing them in real-time with feedback from the instructor instead of watching someone perform the skills and then attempting to replicate that skill after an undefined period of time. Additionally, athletic trainers have demonstrated that they prefer clinical workshops and small group discussions to large group lecture (Armstrong & Weidner, 2011; Eberman & Edler, 2017). A recent Cochrane review suggests that mixed methods sessions that include components of both didactic and interactive learning had the greatest impact on improving patient outcomes (Forsetlund et al., 2009).

Bandura's theory of social learning also supports the suggestion to socialize students to the CE process prior to their graduation and certification. Integrating a CE experience, whether it be a real CE experience or simulated experience, into the curriculum prior to graduation would help prepare students for the expectations of CE as a certified athletic trainer. Simulated learning experiences are often used throughout students' professional education to increase student

confidence in managing a patient care situation (Tivener & Gloe, 2015; Walker, Weidner, & Armstrong, 2015). Theoretically, it is probable that simulated or facilitated CE experiences for students would increase their confidence and prepare them to meet the CE expectations in their professional career.

Participants also suggested that speakers communicate or address potential barriers to implementation during the CE session. Research in physician practice suggest numerous barriers such as time, cost, personnel, and the healthcare system to implementing new knowledge and skills into their patient care (Price et al., 2010). Athletic trainers have also identified similar barriers to implementation of patient-reported outcome measures (Coulombe, Games, Guindon, & Eberman, 2017; Guindon, Eberman, Winkelmann, & Games, 2017; Valier et al., 2014). Addressing specific barriers during a CE session may allow athletic trainers to develop a framework that will work in their clinical setting to overcome the likely barriers. Speakers and/or facilitators of CE sessions can integrate interactive learning into this portion of the session by asking attendees to share their perceived barriers and allowing others to comment on experiences and strategies to mitigate challenges. This format would allow for the integration of interactive, social learning, and potentially interprofessional education.

Lastly, participants commented about their desires to have a physical resource to refer to and centralized resources for them to use following a session. The NATA and district meetings expect speakers to provide an abstract or summary of their presentations to be posted on the website for attendees to reference before, during, and after the session. However, these documents vary greatly in the format and the amount of content included, some may be short abstracts with little detail while others are the presentation, which may include varying amounts of information based on the presenter's preference and presentation style. The participants were

not asked if they were aware of these resources and/or utilized these resources specifically, yet some referred to them suggesting they do know the content is available. Visual pedagogy integrates teaching new content through visual representation. Visual pedagogy could be integrated into CE sessions by asking speakers to create a visual handout depicting the key points of their presentations. This document would serve as something attendees could take home and reference when integrating new knowledge and skills and use as a reminder of the new content learned during the session. Single-page handouts highlighting the key points of the session may serve more meaningful to the attendee than a brief abstract or presentation posted online and shared to them via email. Moreover, this may also allow the speaker the autonomy to prepare and present material in any way they choose, while still allowing attendees to walk away with the key points. Additionally, much of the content taught in CE sessions, specifically the EBP sessions, combines evidence and highlights key pieces for attendees. When considering topics like patient-reported outcome measures or diagnostic accuracy of special tests, the data and evidence to support or refute the use of the outcome measure or selective tissue test is found in numerous articles. Creating a centralized location for these resources that helps guide clinicians to use specific outcome measures or selective tissue tests that are the most evidence based, without requiring them to take the time to find the information. A centralized location would also increase the ease of updating information as new evidence becomes available.

Implementation of Continuing Education

When asked about implementation of CE, participants discussed the barriers to implementation, how confident they were in the process, and the patient's response to the new knowledge or skills the participant was implementing. Participants highlighted time and financial resources most often when asked about barriers to implementation. This aligns with

research in physician practice identifying time and organization as a barrier (25.78% and 11.79%, respectively; Price et al., 2010). The category of time described actual time, appointment time, and learning time for the new skill(s), whereas organization included systems design and policy, equipment and supplies, cost of care, and infrastructure (Price et al., 2010). The participants most commonly commented on the time they had to treat the patient due to patient load, the patient needing to get to practice, and not having one-on-one time with the patient. They commonly cited cost in terms of the resources and equipment needed to integrate some of the information into their clinical practice. Participants also identified coaches and colleagues as barriers, but unlike Price et al.'s (2010) findings, we did not identify the patients as a barrier to changes in the care they provided because of the rapport they had built with their patients.

Participants also discussed their confidence providing care using the new skills following a CE session. Interestingly, when participants had attended a session within one of their areas of weakness, they felt more confident when they applied and/or integrated that information with their patients. However, the participants who had attended a session where they learned new information they had no prior experience with, they felt less confident and wanted more time to practice the skills on a peer or colleague prior to implementation with a patient. When considering this finding in the context of meaningful learning, it makes sense that participants were more confident in their learning when they have previous knowledge on the subject because they were able to integrate that information into their previous knowledge (Ausubel, 1963). Conversely, when they had no prior knowledge on the topic, they did not possess an anchor to connect the new content and as such, had to create a new schema to organize the information.

Additionally, participants discussed their method of integrating small pieces of content they learned immediately following the CE session. This method allowed participants to improve their confidence with smaller pieces and add to their skillset as they became more comfortable with the skills they were performing. Essentially, the participants were using the scaffolding method to progressively develop their knowledge, skillset, and improve their confidence (Vygotsky, 1987). While many participants spoke at length about their increased confidence in integrating new content into their clinical practice, it is important to highlight that they were not using objective measures to determine the efficacy of the changes in patient care.

When asked about their patients' responses to the change in treatment, participants described the subjective positive feedback their patients provided. Patient-centered care is one of the Institutes of Medicine's (IOM) core competencies (Knebel & Greiner, 2003). The IOM core competencies define the foundational behaviors that all healthcare professionals should demonstrate across all healthcare professions (Knebel & Greiner, 2003). Patient-centered care places the patient at the center of their own healthcare with the emphasis on high quality of care of the whole person, shifting the focus away from the disability (Knebel & Greiner, 2003). The participants demonstrate clinician-centered care when asking the patients for their perceptions of the treatment performed by the clinician; whereas, the focus needs to be placed on the patients' improvements, whether subjective or objective. Subjectively, the participants also asked the patients about their changes following treatment, such as decreases in pain, tightness, and discomfort. However, those findings were lacked objective measures to truly determine the impact of the CE session on their patients' outcomes. Considering the earlier discussion of quality improvement measures, integrating objective measures to identify changes in patient outcomes will provide higher quality data about the efficacy of CE sessions.

Limitations

One limitation of this study was the lack of representation of athletic trainers from emerging settings. Participants primarily worked in the college/university or in a secondary school; only one participant was employed full time in physician practice. However, this participant did express that CE sessions specifically for athletic trainers within physician practice had been limited, based on her experiences. Another limitation of this study was the inability to determine if participants were integrating information from CE sessions into their clinical practice. Some participants were able to give very specific examples of skills and/or knowledge they had integrated recently, while others provided broad generalizations. This inability to recall specific examples suggests that the participants may not have integrated anything from CE sessions recently and/or may not integrate much information from CE sessions into clinical practice, both of which are concerning findings.

Recommendations for Clinical Practice

Identifying the factors contributing to athletic trainers' selection of CE sessions was the most impactful finding in this study. Understanding the mechanism athletic trainers are using to choose their sessions allows us to identify the problems and provide suggestions to improve the mechanism and structure of CE to ultimately improve patient care. Throughout this study participants stated they chose CE based on perceived areas of weakness, patient population, clinical setting, and areas of interest; however, we know these are not effective mechanisms for choosing CE. Therefore, moving forward, a mechanism of guided CE to help clinicians more accurately identify areas of weakness and areas of CE need is necessary to improve patient outcomes. Additionally, it is likely that a mechanism of guided CE will increase athletic trainers

implementation of content from a session into clinical practice due to the room for growth available within the content area.

My second recommendation is to develop and/or organize professional learning communities of athletic trainers who can support each other in the lifelong learning process. This learning community may consist of a variety of athletic trainers who may or may not work in similar setting, provide care for similar patient populations, or have similar areas of weakness. However, these professional learning communities will allow for communication of its members to learn new knowledge and skills and encourage implementation into clinical practice. In order to develop these professional learning communities, we must have a body of athletic trainers who are passionate about lifelong learning and understand the importance and impact on patient care, I believe this starts in professional education programs. As educators we must teach students the methods to become a successful lifelong learner and instill a passion for continual growth and advancement in both their professional and personal lives. I believe this starts by selecting preceptors who model this behavior to students, followed by reinforcement of professional development throughout the curriculum. The students taught in this model can then move forward into the profession to develop professional learning communities of their colleagues to encourage continual growth and promote improved patient care.

Future Research

Future research should explore the mechanism of guided CE described previously to determine the efficacy of a new model for CE compared to the current structure. This approach would likely require longitudinal comparison studies to examine athletic trainers' changes in knowledge and patient outcomes. Future research should also further examine implementation of CE to determine how much athletic trainers implement following a session and changes in

patient outcomes over time. This research is imperative to determine how implementation occurs and practice challenges currently faced by practicing clinicians, which will allow CE facilitators to adjust the current delivery of CE to better meet the needs of practicing clinicians. Additionally, future research should continue to explore mechanisms for educating and facilitating the integration of collecting patient outcome data to guide clinical practice and CE decisions.

Conclusion

The information gathered in this study suggests athletic trainers value CE to advance their knowledge, help them to maintain evidence-based practice, and stay up-to-date with current trends in healthcare. While all participants found value in CE, it is still unclear if all of the participants are effectively attending sessions and implementing new knowledge and skills to improve their patient care. When considering their approach to CE and selection of conferences and specific sessions, participants were clinician-centered, meaning they based their decisions on their perceptions of their needs and their patients' needs, along with considering time and financial barriers. This approach is in conflict with the emphasis of patient-centered care within athletic training specifically, and across healthcare today. To align with the IOM core competencies, athletic trainers must begin to shift the focus within all aspects of their professional practice to a patient-centered approach. In order to do this, we must consider an alternative mechanism to ensure continued competence. This process begins by assessing athletic trainers' cognitive knowledge with a low-stake assessment to determine areas of knowledge deficit followed by an evaluation of patient care by examining patient outcome data, in comparison with peers in the profession to determine where improvements can be made. However, to determine the quality and effectiveness of patient care with outcomes data, athletic

trainers must implement objective measures consistently to collect patient outcomes and employ standard documentation practices. Lastly, athletic trainers need to seek CE sessions specific to what they have identified as areas of weakness or areas for improvement based on various forms of cognitive and clinical assessments.

Professionals in athletic training that organize and plan CE sessions and conferences should consider the needs and preferences of athletic trainers and offer more hands-on interactive sessions to increase competency in skills performance. Additionally, as a profession, we must consider an alternative mechanism for CE that ensures participants engage, gain knowledge and skills, and can successfully integrate the information into their clinical practice. A potential option to evaluate the effectiveness of CE sessions is to integrate simulation or standardized patient evaluations into CE to determine the learner's ability to apply the information with a patient following the session. Simulation or standardized patient assessments would also provide clear objective data about the amount of learning that occurs during CE and the effectiveness of different delivery formats. Utilization of multiple assessment mechanisms to identify areas of cognitive knowledge deficit, psychomotor skill deficit, and decreased patient outcomes to guide CE opportunities will help athletic trainers choose sessions that will improve an area of weakness and likely have a greater impact on their clinical practice.

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APPENDIX A: DEMOGRAPHIC/CONTACT SURVEY INFORMATION

1. Please provide your name (first and last): _____
2. Please provide the best email address for me to contact you to schedule the interview:

   _____
3. Please provide the best phone number for me to contact you for the interview:

   _____
4. What is your age to the nearest year? _____
5. What is your gender
   a. Male
   b. Female
   c. Intersex
   d. Transgender
   e. Transsexual
   f. Female to Male (FTM)
   g. Male to Female (MTF)
   h. Androgynous
   i. I prefer not to say
   j. Other (please specify): _____
6. What is your current clinical setting?
   a. College/university

b. Secondary schools

c. Clinic and hospital

d. Professional sports

e. Performing arts

f. Public safety

g. Military

h. Occupational health

i. Other (please specify) _____

7. How many years of clinical experience do you have (post-certification)? _____

8. What is your highest degree earned?

a. Entry-level Bachelors (BS, BA)

b. Entry-level Masters (MS, MA)

c. Post-professional Masters (MS, MA, or similar)

d. Other Masters

e. Clinical Doctorate (DAT or similar)

f. Research Doctorate (PhD, EdD)